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(54) **USER EQUIPMENT AND BASE STATION BEHAVIOR IN RESPONSE TO AN OVERLOAD INDICATOR**

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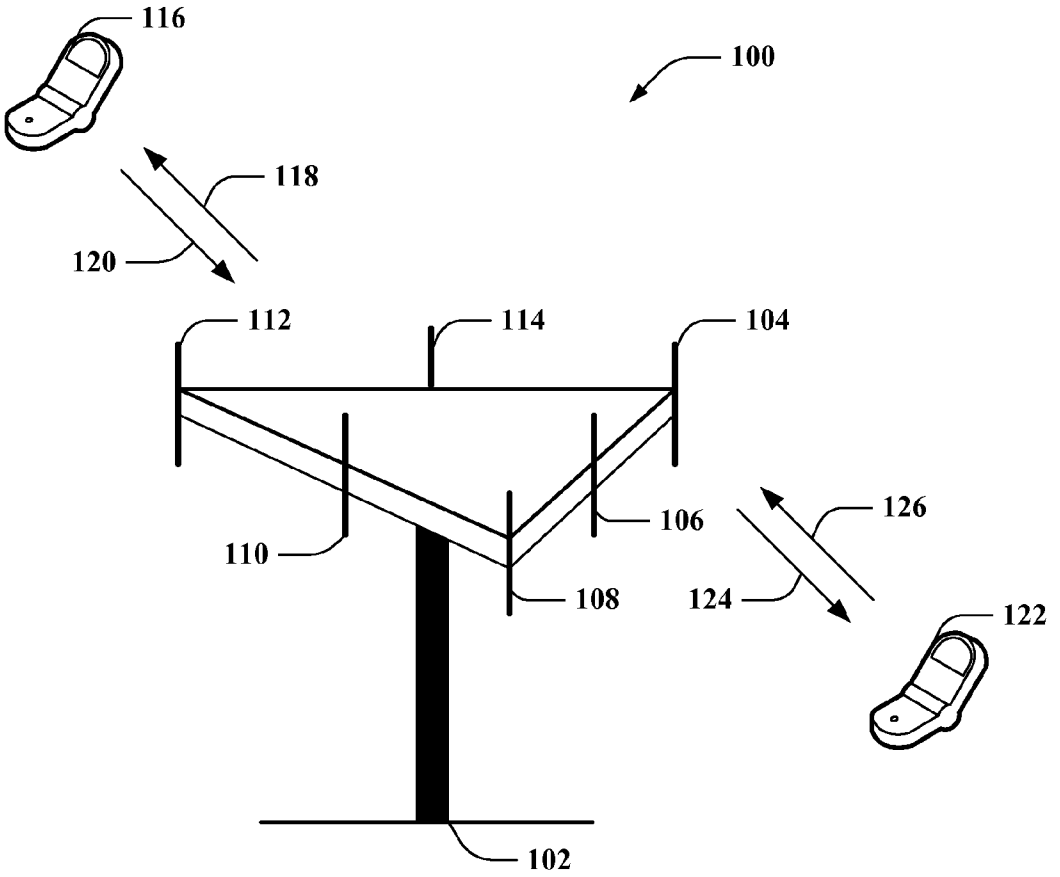
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(57) **ABSTRACT**

Systems and methodologies are described that facilitate responding to overload indicators in a wireless communication environment. A non-serving base station can send an over-the-air (OTA) overload indicator (OI) and a backhaul OI. A UE can receive the OTA OI from the non-serving base station, generate a report based upon the OTA OI, and send the report to a serving base station. The serving base station can receive the report from the UE, and generate a power control command for the UE based at least in part upon the report. Moreover, the serving base station can generate the power control command for the UE further based upon the backhaul OI received from the non-serving base station. For example, the UE can be configured to ignore the OTA OI. By way of another example, the serving base station can cause the non-serving base station to inhibit sending the backhaul OI.



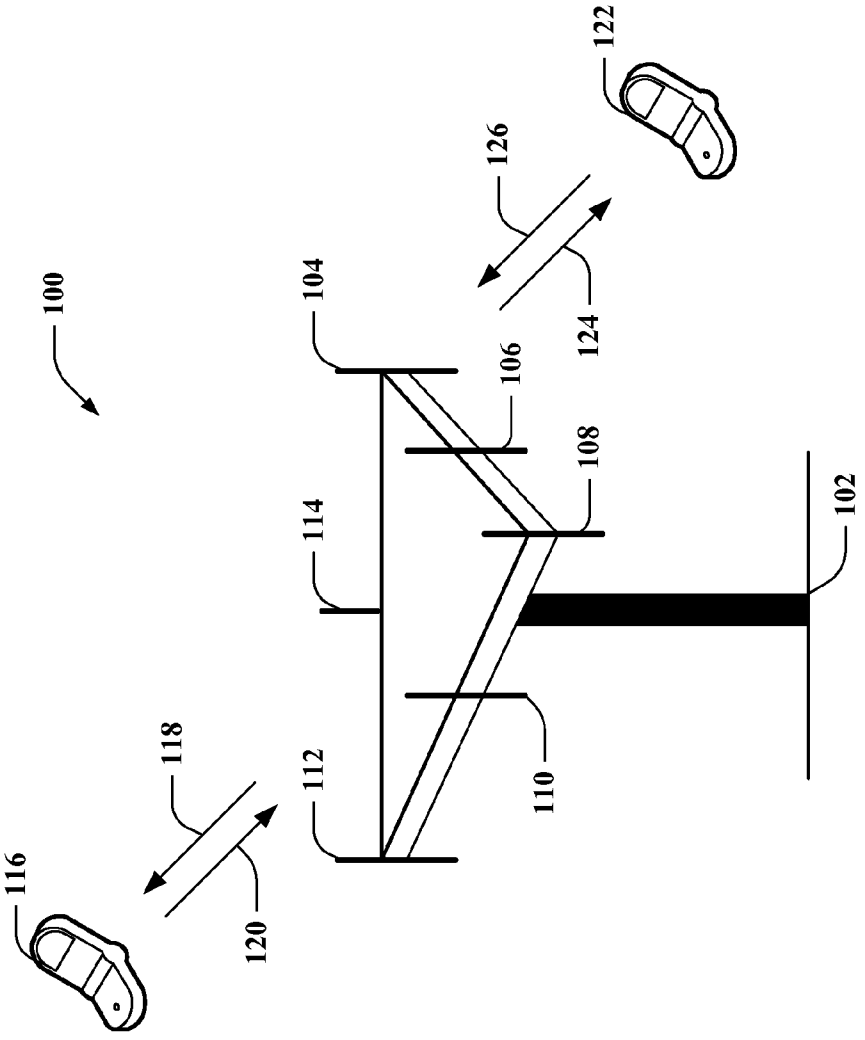


FIG. 1

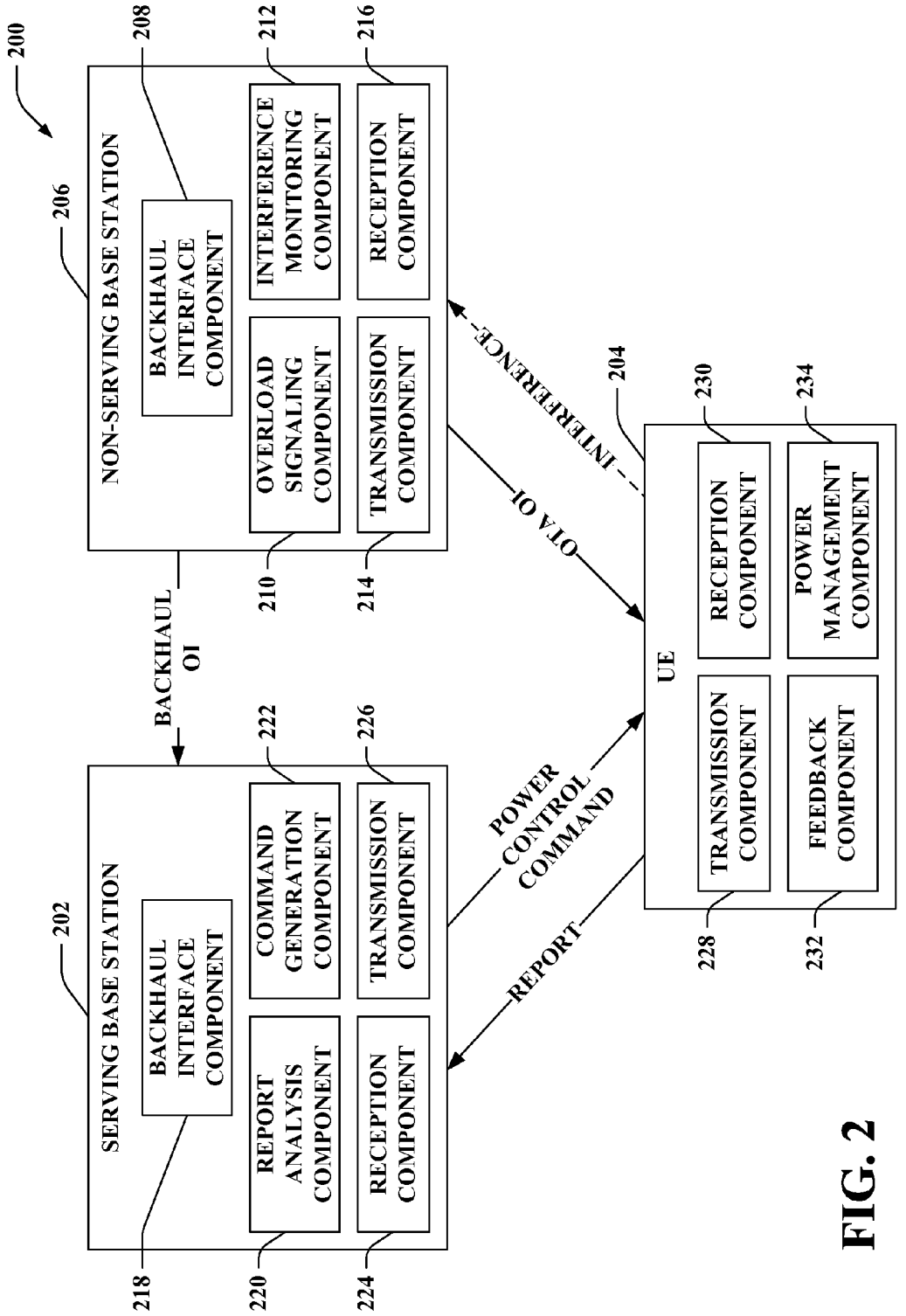

200
NON-SERVING BASE STATION
206
208
BACKHAUL INTERFACE COMPONENT
212
INTERFERENCE MONITORING COMPONENT
216
RECEPTION COMPONENT
OVERLOAD SIGNALING COMPONENT
210
TRANSMISSION COMPONENT
214
INTERFERENCE
204
OTA OI
BACKHAUL OI
SERVING BASE STATION
202
BACKHAUL INTERFACE COMPONENT
218
COMMAND GENERATION COMPONENT
222
REPORT ANALYSIS COMPONENT
220
TRANSMISSION COMPONENT
226
RECEPTION COMPONENT
224
POWER CONTROL COMMAND
REPORT
UE
230
RECEPTION COMPONENT
234
POWER MANAGEMENT COMPONENT
TRANSMISSION COMPONENT
228
FEEDBACK COMPONENT
232

FIG. 2

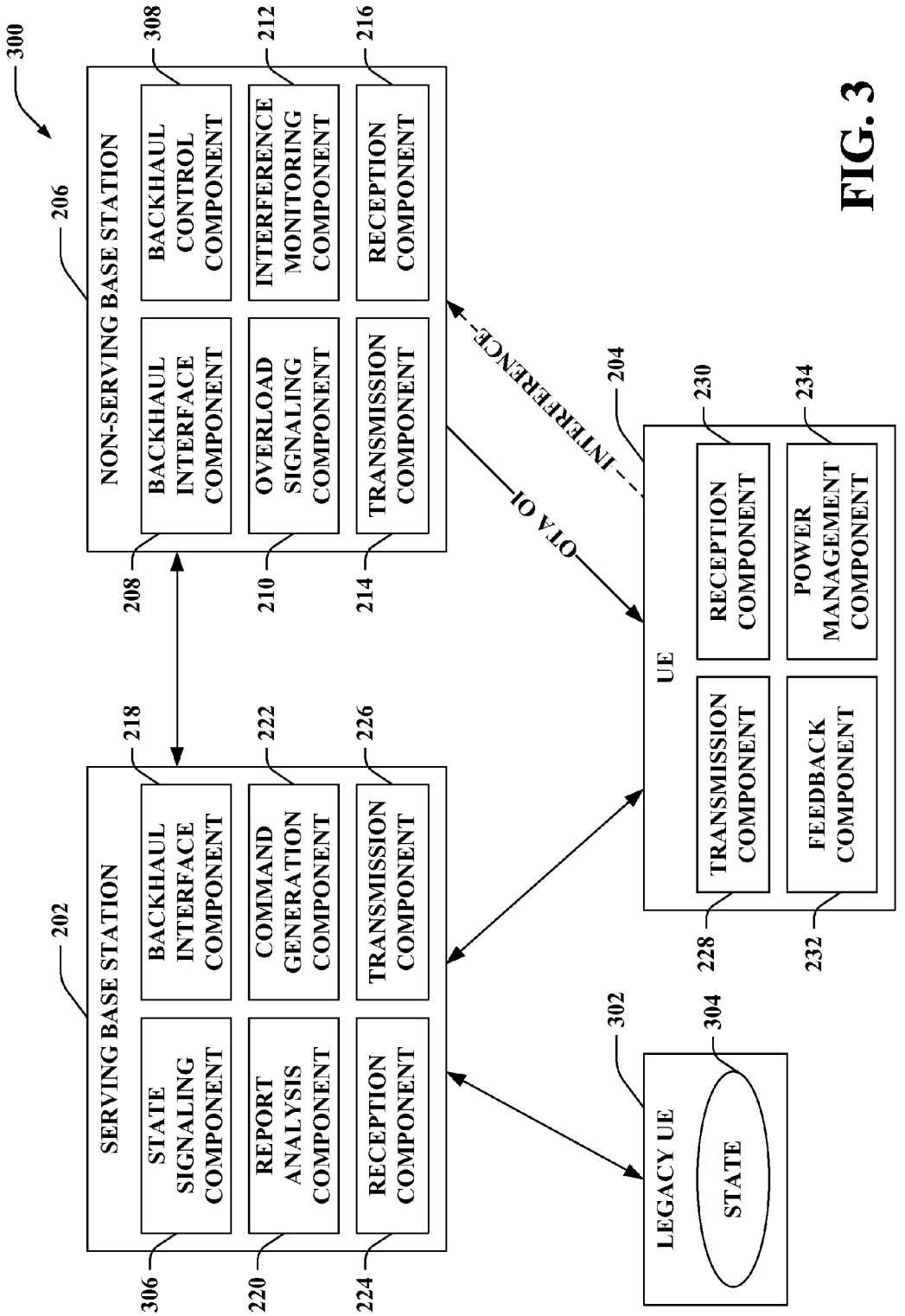

300
206
NON-SERVING BASE STATION
BACKHAUL INTERFACE COMPONENT
OVERLOAD SIGNALING COMPONENT
TRANSMISSION COMPONENT
BACKHAUL CONTROL COMPONENT
INTERFERENCE MONITORING COMPONENT
RECEPTION COMPONENT
208
210
214
308
212
216
INTERFERENCE
OTA OI
204
UE
RECEPTION COMPONENT
POWER MANAGEMENT COMPONENT
TRANSMISSION COMPONENT
FEEDBACK COMPONENT
230
234
228
232
202
SERVING BASE STATION
STATE SIGNALING COMPONENT
REPORT ANALYSIS COMPONENT
RECEPTION COMPONENT
BACKHAUL INTERFACE COMPONENT
COMMAND GENERATION COMPONENT
TRANSMISSION COMPONENT
306
220
224
218
222
226
302
304
LEGACY UE
STATE

FIG. 3

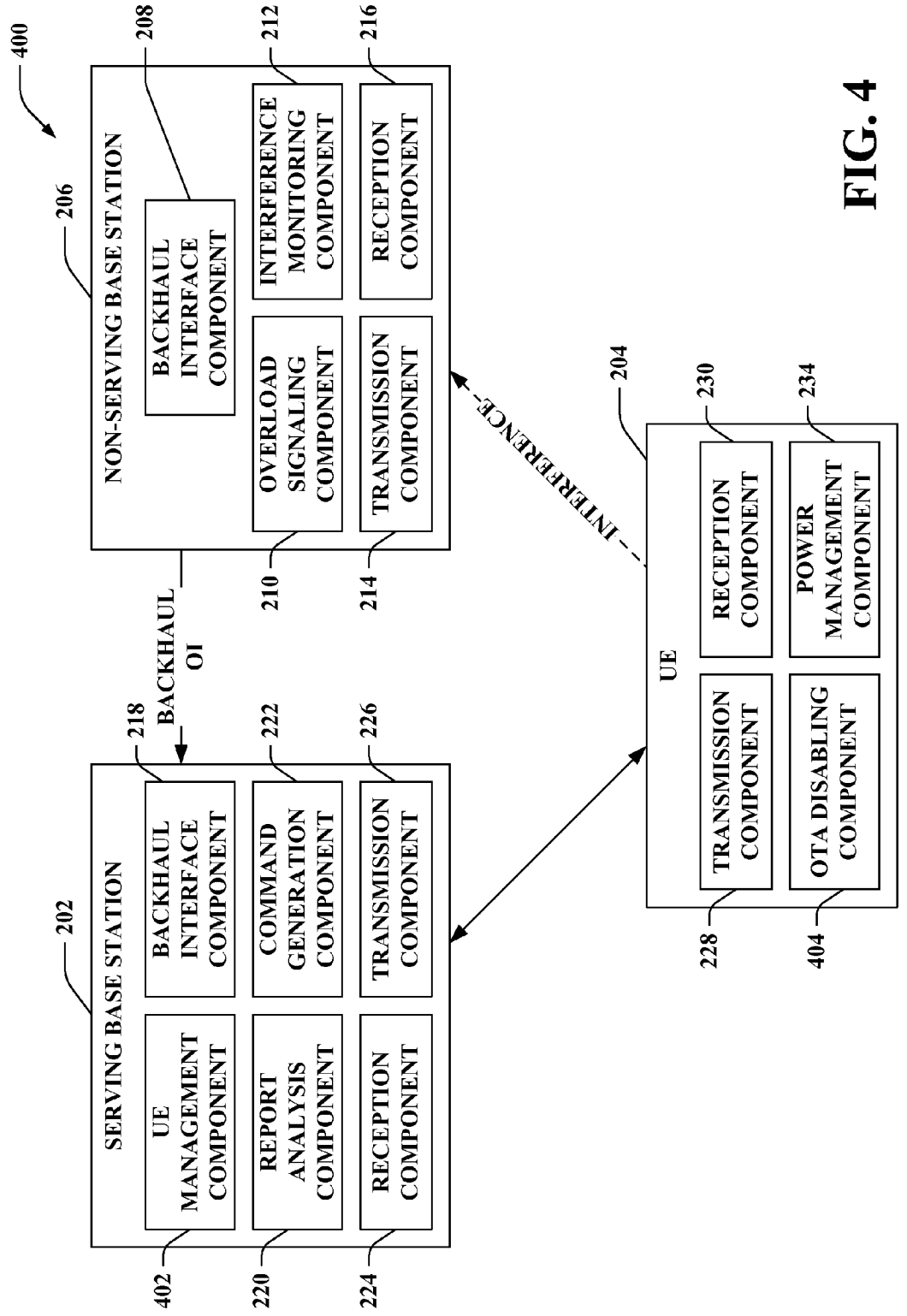

400
NON-SERVING BASE STATION
206
BACKHAUL INTERFACE COMPONENT
208
OVERLOAD SIGNALING COMPONENT
210
INTERFERENCE MONITORING COMPONENT
212
TRANSMISSION COMPONENT
214
RECEPTION COMPONENT
216
BACKHAUL OI
INTERFERENCE
SERVING BASE STATION
202
UE MANAGEMENT COMPONENT
402
BACKHAUL INTERFACE COMPONENT
218
REPORT ANALYSIS COMPONENT
220
COMMAND GENERATION COMPONENT
222
RECEPTION COMPONENT
224
TRANSMISSION COMPONENT
226
UE
204
TRANSMISSION COMPONENT
228
RECEPTION COMPONENT
230
OTA DISABLING COMPONENT
404
POWER MANAGEMENT COMPONENT
234

FIG. 4

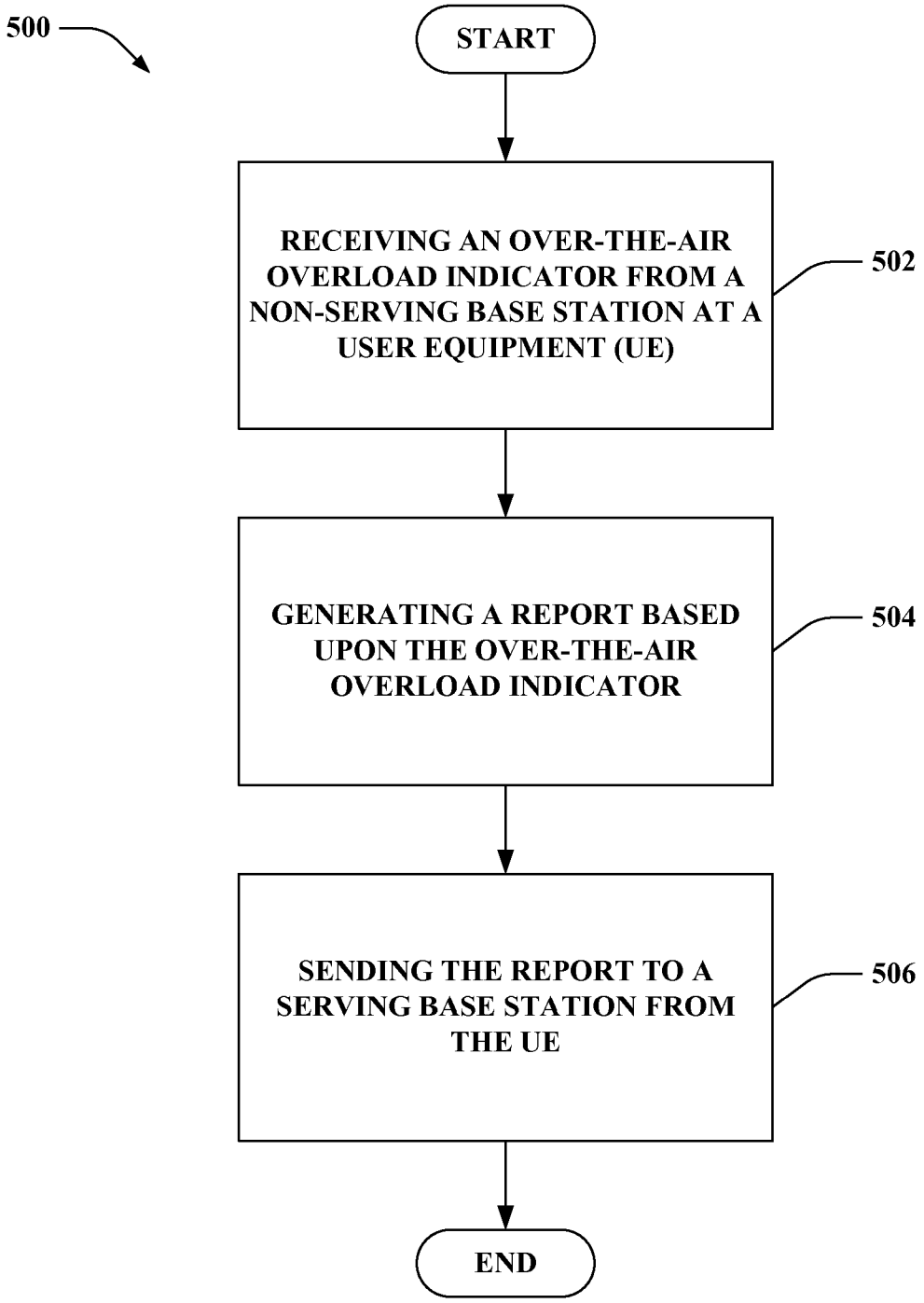

500
START
RECEIVING AN OVER-THE-AIR OVERLOAD INDICATOR FROM A NON-SERVING BASE STATION AT A USER EQUIPMENT (UE)
502
GENERATING A REPORT BASED UPON THE OVER-THE-AIR OVERLOAD INDICATOR
504
SENDING THE REPORT TO A SERVING BASE STATION FROM THE UE
506
END

FIG. 5

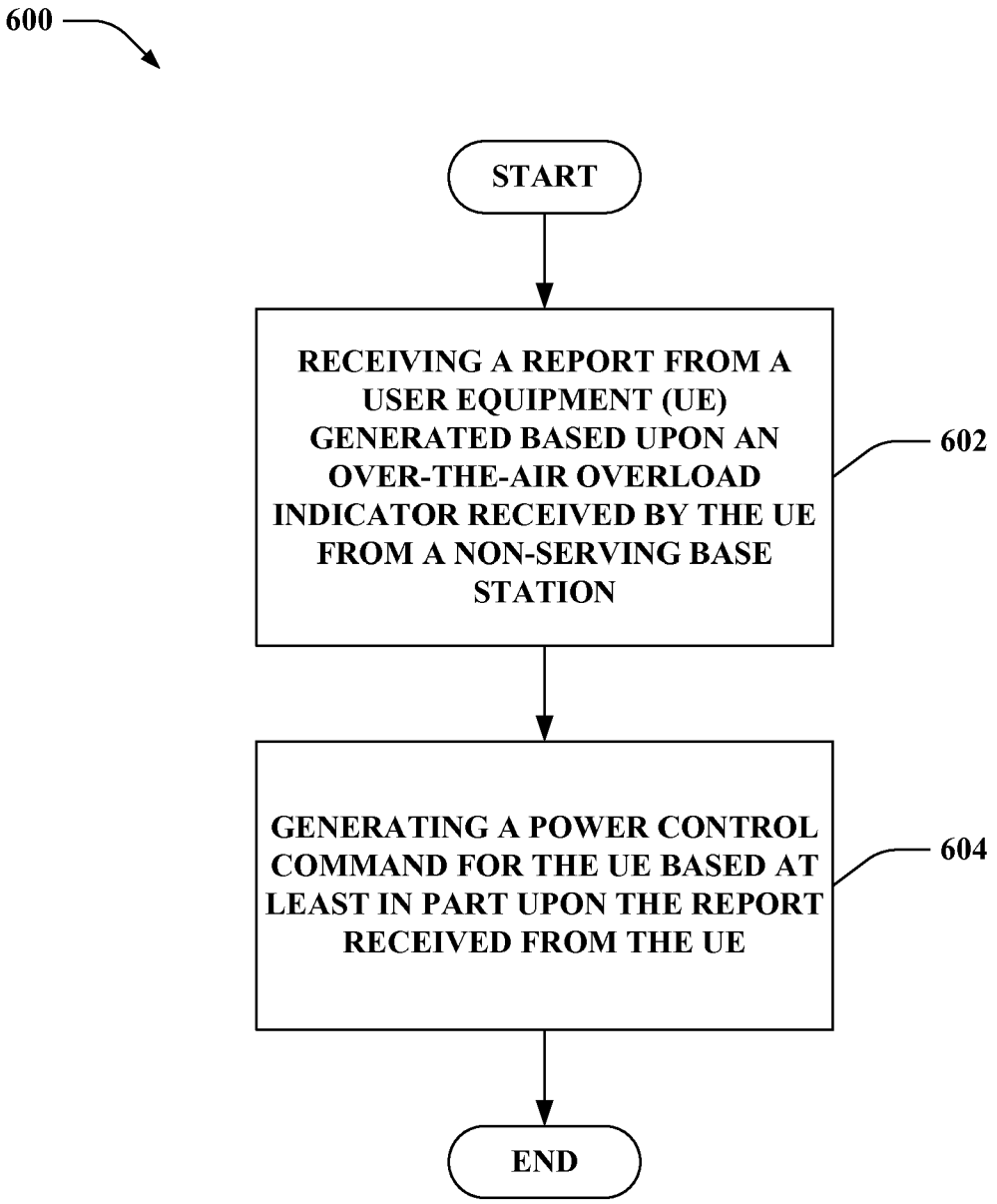

600
START
RECEIVING A REPORT FROM A USER EQUIPMENT (UE) GENERATED BASED UPON AN OVER-THE-AIR OVERLOAD INDICATOR RECEIVED BY THE UE FROM A NON-SERVING BASE STATION
602
GENERATING A POWER CONTROL COMMAND FOR THE UE BASED AT LEAST IN PART UPON THE REPORT RECEIVED FROM THE UE
604
END

FIG. 6

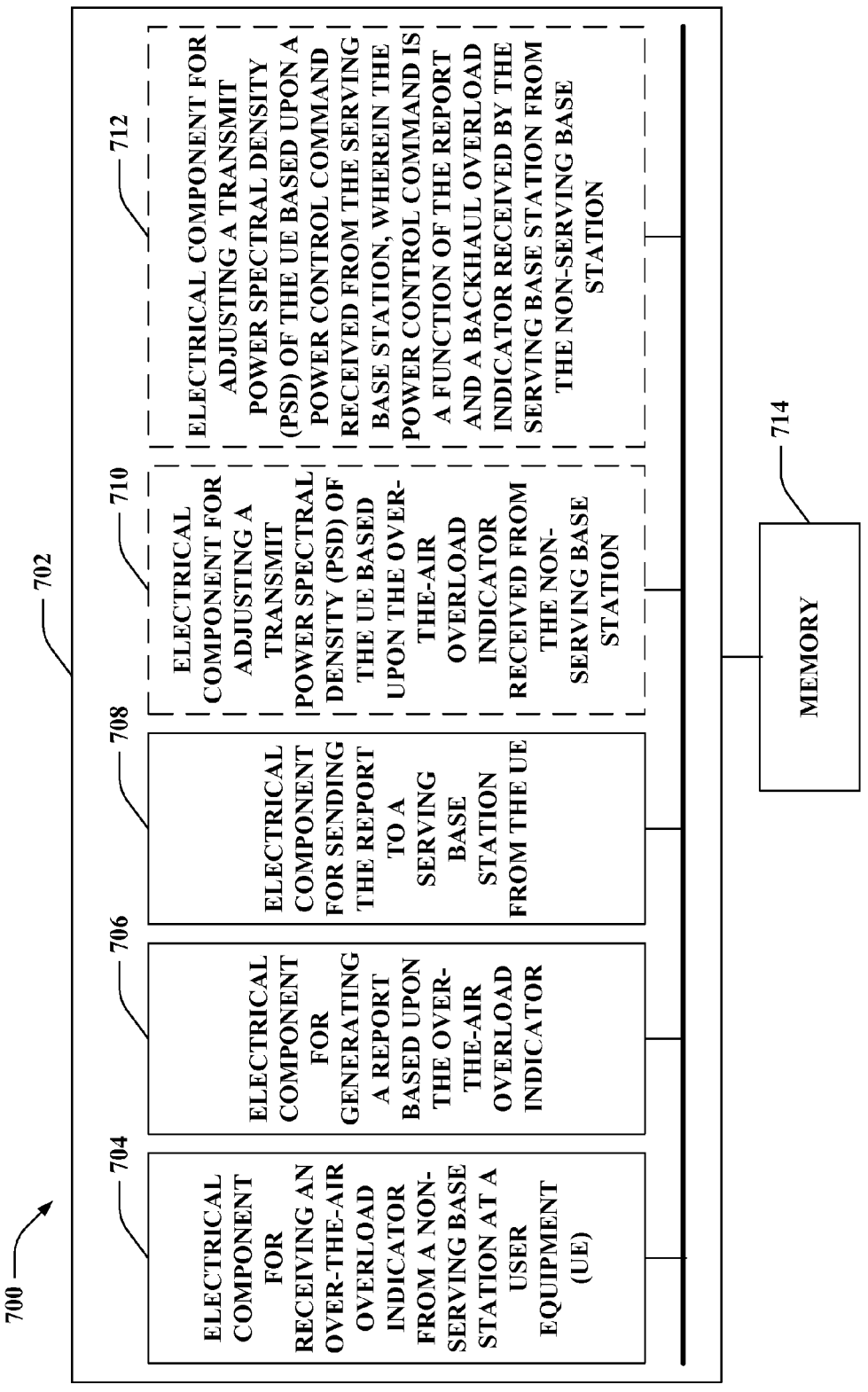

700
702
704
ELECTRICAL COMPONENT FOR RECEIVING AN OVER-THE-AIR OVERLOAD INDICATOR FROM A NON-SERVING BASE STATION AT A USER EQUIPMENT (UE)
706
ELECTRICAL COMPONENT FOR GENERATING A REPORT BASED UPON THE OVER-THE-AIR OVERLOAD INDICATOR
708
ELECTRICAL COMPONENT FOR SENDING THE REPORT TO A SERVING BASE STATION FROM THE UE
710
ELECTRICAL COMPONENT FOR ADJUSTING A TRANSMIT POWER SPECTRAL DENSITY (PSD) OF THE UE BASED UPON THE OVER-THE-AIR OVERLOAD INDICATOR RECEIVED FROM THE NON-SERVING BASE STATION
712
ELECTRICAL COMPONENT FOR ADJUSTING A TRANSMIT POWER SPECTRAL DENSITY (PSD) OF THE UE BASED UPON A POWER CONTROL COMMAND RECEIVED FROM THE SERVING BASE STATION, WHEREIN THE POWER CONTROL COMMAND IS A FUNCTION OF THE REPORT AND A BACKHAUL OVERLOAD INDICATOR RECEIVED BY THE SERVING BASE STATION FROM THE NON-SERVING BASE STATION
714
MEMORY

FIG. 7

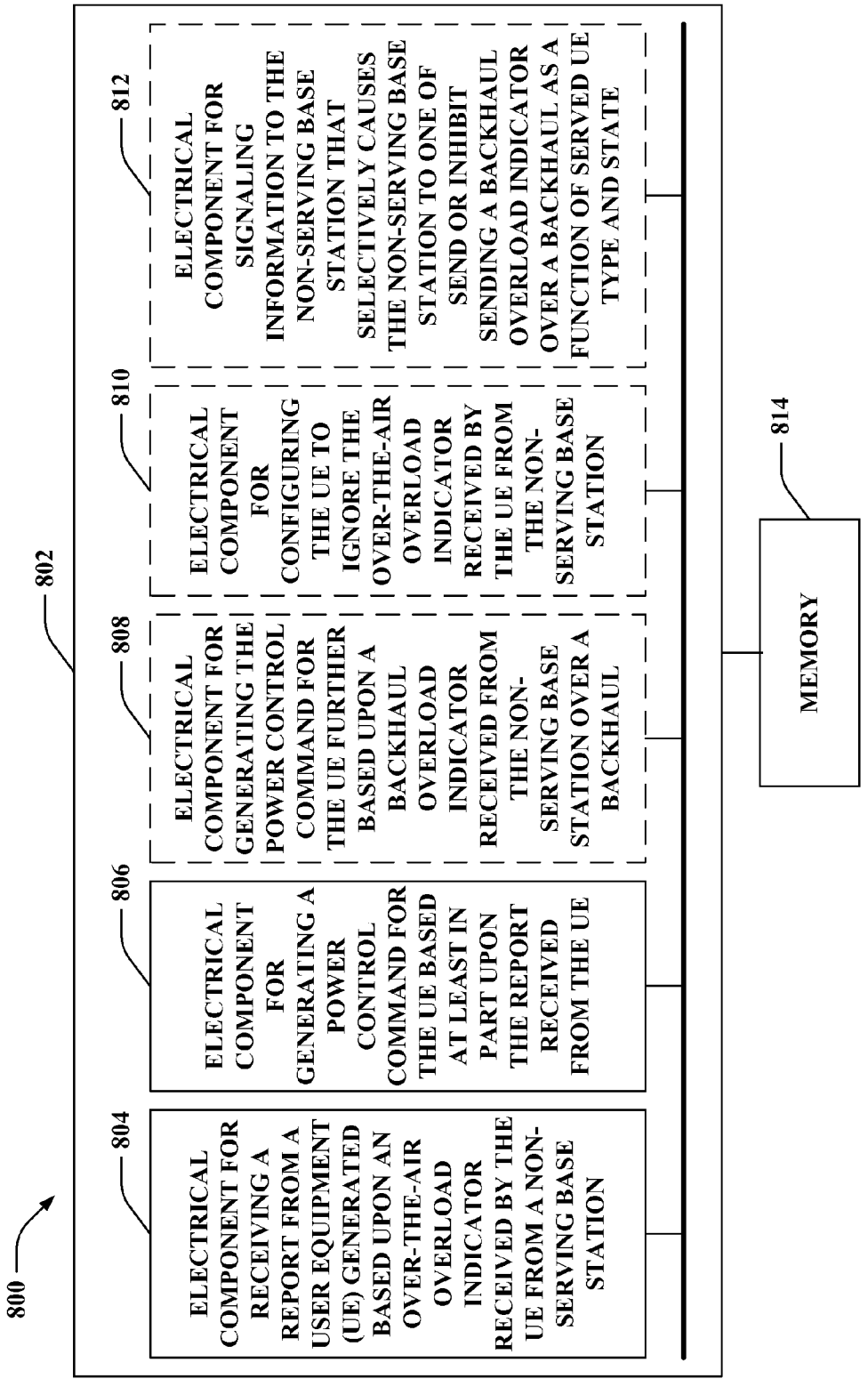

800
802
804
ELECTRICAL COMPONENT FOR RECEIVING A REPORT FROM A USER EQUIPMENT (UE) GENERATED BASED UPON AN OVER-THE-AIR OVERLOAD INDICATOR RECEIVED BY THE UE FROM A NON-SERVING BASE STATION
806
ELECTRICAL COMPONENT FOR GENERATING A POWER CONTROL COMMAND FOR THE UE BASED AT LEAST IN PART UPON THE REPORT RECEIVED FROM THE UE
808
ELECTRICAL COMPONENT FOR GENERATING THE POWER CONTROL COMMAND FOR THE UE FURTHER BASED UPON A BACKHAUL OVERLOAD INDICATOR RECEIVED FROM THE NON-SERVING BASE STATION OVER A BACKHAUL
810
ELECTRICAL COMPONENT FOR CONFIGURING THE UE TO IGNORE THE OVER-THE-AIR OVERLOAD INDICATOR RECEIVED BY THE UE FROM THE NON-SERVING BASE STATION
812
ELECTRICAL COMPONENT FOR SIGNALING INFORMATION TO THE NON-SERVING BASE STATION THAT SELECTIVELY CAUSES THE NON-SERVING BASE STATION TO ONE OF SEND OR INHIBIT SENDING A BACKHAUL OVERLOAD INDICATOR OVER A BACKHAUL AS A FUNCTION OF SERVED UE TYPE AND STATE
814
MEMORY

FIG. 8

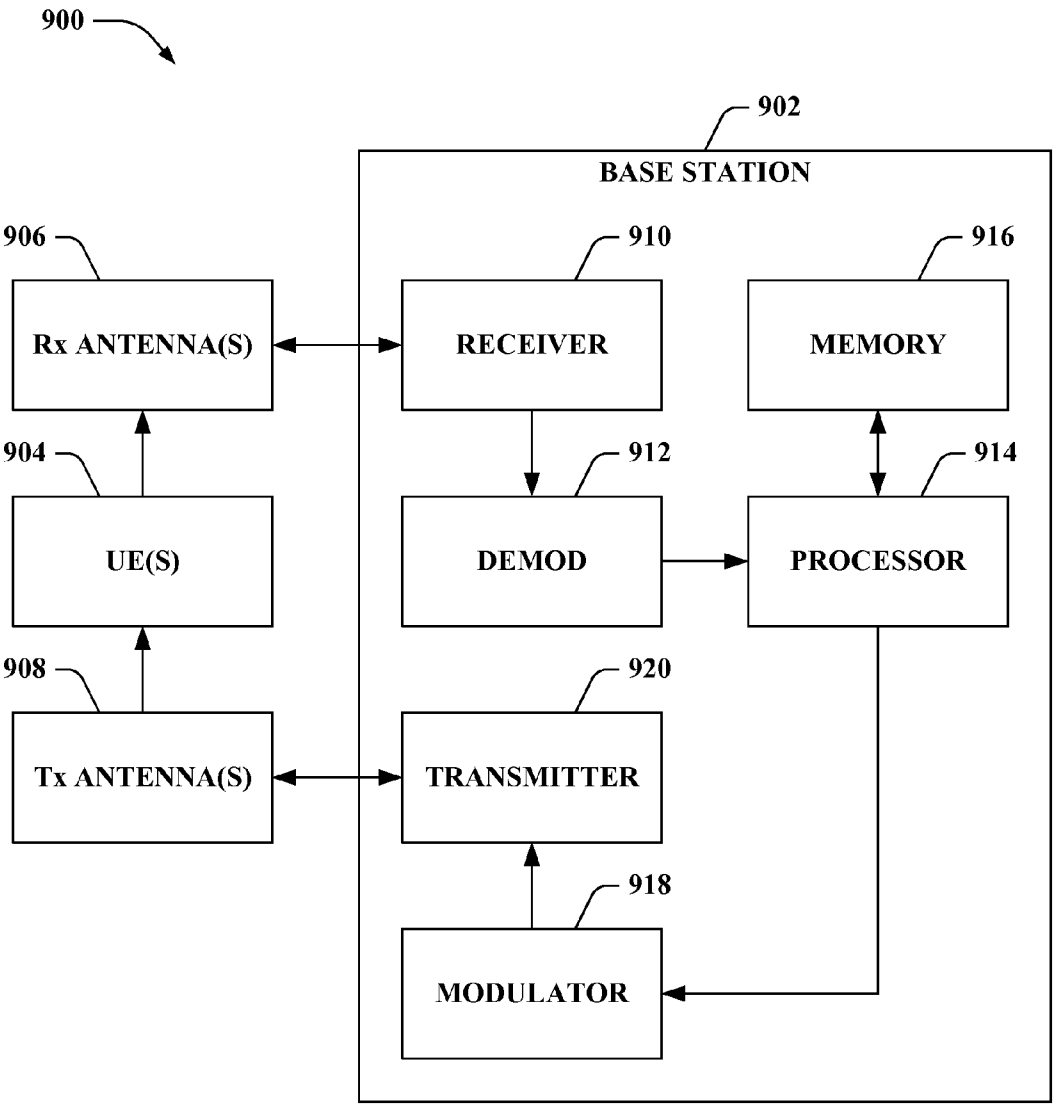

900
902
BASE STATION
906
Rx ANTENNA(S)
910
RECEIVER
916
MEMORY
904
UE(S)
912
DEMOD
914
PROCESSOR
908
Tx ANTENNA(S)
920
TRANSMITTER
918
MODULATOR

FIG. 9

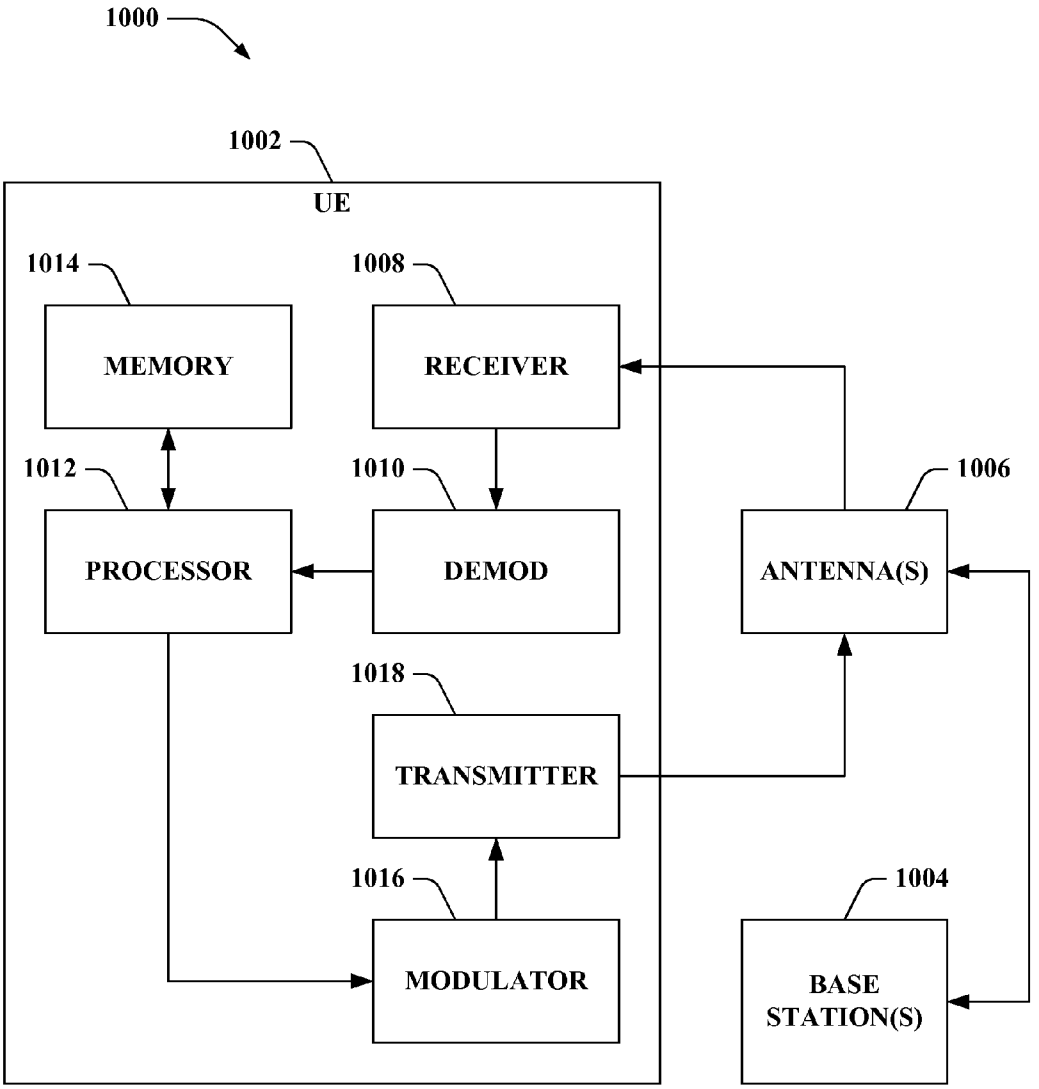

1000
1002
UE
1014
MEMORY
1008
RECEIVER
1012
PROCESSOR
1010
DEMOD
1006
ANTENNA(S)
1018
TRANSMITTER
1016
MODULATOR
1004
BASE STATION(S)

FIG. 10

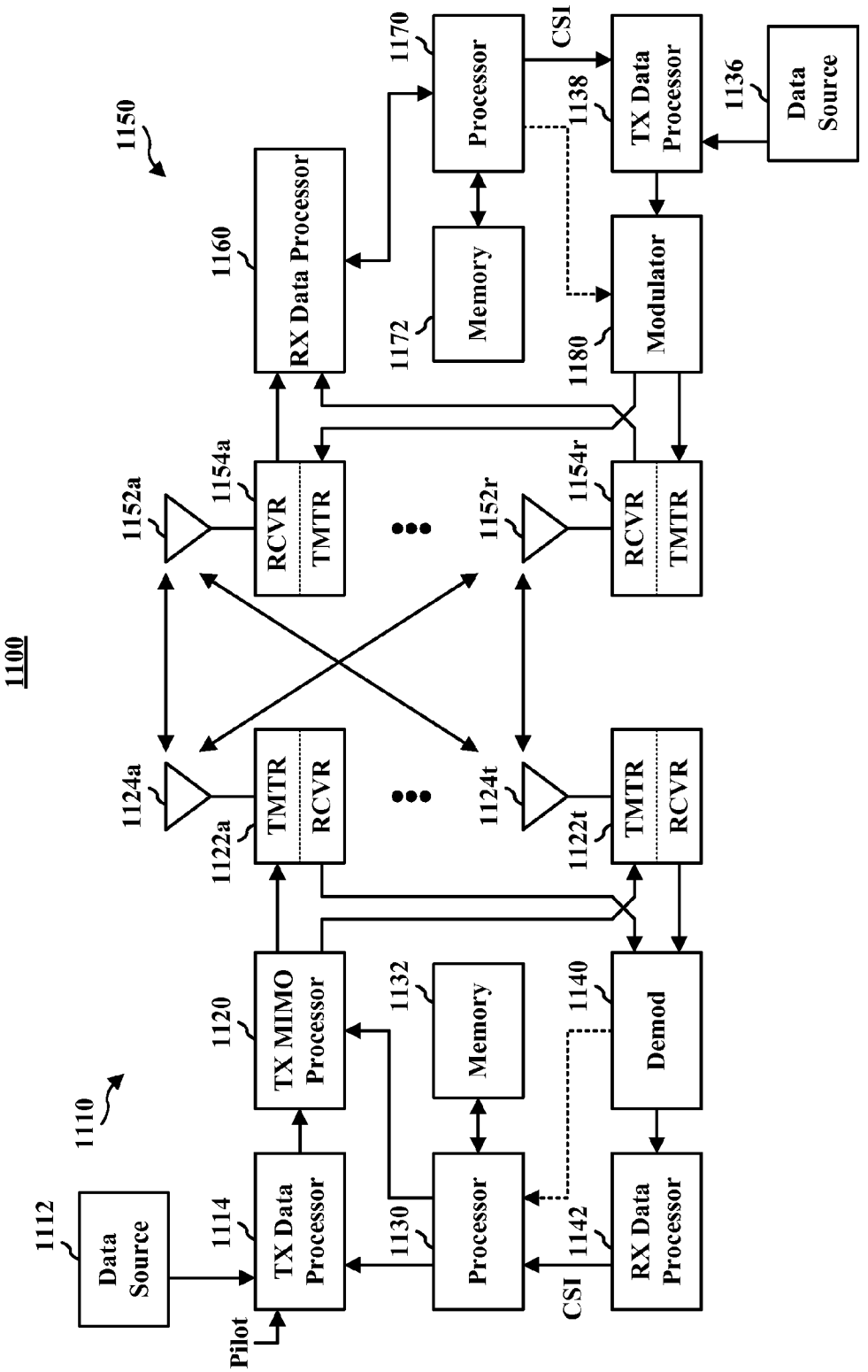

1100
1110
1112
Data Source
1114
TX Data Processor
Pilot
1120
TX MIMO Processor
1122a
TMTR
RCVR
1124a
1124t
1122t
1130
Processor
1132
Memory
CSI
1140
Demod
1142
RX Data Processor
1150
1152a
1152r
1154a
1154r
RCVR
TMTR
1160
RX Data Processor
1170
Processor
CSI
1138
TX Data Processor
1136
Data Source
1172
Memory
1180
Modulator

FIG. 11

USER EQUIPMENT AND BASE STATION BEHAVIOR IN RESPONSE TO AN OVERLOAD INDICATOR

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Patent Application Ser. No. 61/226,050 entitled "MOBILE DEVICE AND EVOLVED NODE-B BEHAVIOR IN RESPONSE TO OVERLOAD INDICATORS" which was filed Jul. 16, 2009. The entirety of the aforementioned application is herein incorporated by reference.

BACKGROUND

[0002] I. Field

[0003] The following description relates generally to wireless communications, and more particularly to responses to an overload indicator in a wireless communication system.

[0004] II. Background

[0005] Wireless communication systems are widely deployed to provide various types of communication content such as, for example, voice, data, and so on. Typical wireless communication systems can be multiple-access systems capable of supporting communication with multiple users by sharing available system resources (e.g., bandwidth, transmit power). Examples of such multiple-access systems can include Code Division Multiple Access (CDMA) systems, Time Division Multiple Access (TDMA) systems, Frequency Division Multiple Access (FDMA) systems, Orthogonal Frequency Division Multiple Access (OFDMA) systems, and the like. Additionally, the systems can conform to specifications such as third generation partnership project (3GPP), 3GPP long term evolution (LTE), ultra mobile broadband (UMB), multi-carrier wireless specifications such as evolution data optimized (EV-DO), one or more revisions thereof, etc.

[0006] Generally, wireless multiple-access communication systems can simultaneously support communication for multiple user equipments (UEs). Each UE can communicate with one or more base stations via transmissions on forward and reverse links. The forward link (or downlink) refers to the communication link from base stations to UEs, and the reverse link (or uplink) refers to the communication link from UEs to base stations. Further, communications between UEs and base stations can be established via single-input single-output (SISO) systems, multiple-input single-output (MISO), multiple-input multiple-output (MIMO) systems, and so forth. In addition, UEs can communicate with other UEs (and/or base stations with other base stations) in peer-to-peer wireless network configurations.

[0007] Heterogeneous wireless communication systems commonly can include various types of base stations, each of which can be associated with differing cell sizes. For instance, macro cell base stations typically leverage antenna (s) installed on masts, rooftops, other existing structures, or the like. Further, macro cell base stations oftentimes have power outputs on the order of tens of watts, and can provide coverage for large areas. The femto cell base station is another class of base station that has recently emerged. Femto cell base stations are commonly designed for residential or small business environments, and can provide wireless coverage to UEs using a wireless technology (e.g., 3GPP Universal Mobile Telecommunications System (UMTS) or LTE, 1x Evolution-Data Optimized (1xEV-DO)) to communicate with the UEs and an existing broadband Internet connection (e.g., digital subscriber line (DSL), cable) for backhaul. A femto cell base station can also be referred to as a Home Evolved Node B (HeNB), a Home Node B (HNB), a femto cell, an access point base station, or the like. Examples of other types of base stations include pico cell base stations, micro cell base stations, and so forth.

[0008] To maintain uplink performance in a wireless communication system, interference caused by UE(s) in neighboring cell(s) (e.g., UE(s) served by respective serving base station(s)) can be monitored. For instance, interference over thermal (IoT) can be measured by a non-serving base station. Moreover, tight IoT control can be achieved by the non-serving base station using an overload indicator. According to an example, the non-serving base station can measure an interference level caused by an uplink transmission sent by a UE in a neighboring cell (e.g., served by a serving base station). Following this example, if the interference level exceeds a threshold, the non-serving base station can generate an overload indicator that signifies that the non-serving base station is overloaded on the uplink.

[0009] Conventionally, the overload indicator is sent between base stations over a backhaul via an X2 interface. Pursuant to the above example, the non-serving base station that generates the overload indicator based upon interference caused by the UE served by the serving base station can send the overload indicator over the backhaul to the serving base station. Further, the serving base station can control a transmit power level of the UE served thereby using a power control command generated based upon the overload indicator received over the backhaul. In common approaches, the response to the overload indicator received by the serving base station over the backhaul can be dependent upon base station implementation.

[0010] However, in a heterogeneous wireless communication system, a backhaul can be lacking. For example, the X2 interface may not be available between a femto cell base station and a macro cell base station. To address the foregoing, over-the-air transmission of an overload indicator can be leveraged. Thus, the non-serving base station that generates the overload indicator can transmit the overload indicator over-the-air to the serving base station. Further, the serving base station (e.g., femto cell base station) can have receiver capability similar to a UE. Moreover, if the overload indicator is sent over-the-air, the UE can also receive the overload indicator in addition to reception by the serving base station. However, conventional approaches typically fail to reconcile responses to the power control command received by the UE from the serving base station and the overload indicator received over-the-air from the non-serving base station.

SUMMARY

[0011] In accordance with one or more embodiments and corresponding disclosure thereof, various aspects are described in connection with facilitating responding to overload indicators in a wireless communication environment. A non-serving base station can send an over-the-air (OTA) overload indicator (OI) and a backhaul OI. A UE can receive the OTA OI from the non-serving base station, generate a report based upon the OTA OI, and send the report to a serving base station. The serving base station can receive the report from the UE, and generate a power control command for the UE based at least in part upon the report. Moreover, the serving base station can generate the power control command for the

UE further based upon the backhaul OI received from the non-serving base station. For example, the UE can be configured to ignore the OTA OI. By way of another example, the serving base station can cause the non-serving base station to inhibit sending the backhaul OI.

[0012] According to related aspects, a method that facilitates responding to overload indicators in a wireless communication environment is described herein. The method can include receiving an over-the-air overload indicator from a non-serving base station at a user equipment (UE). Further, the method can include generating a report based upon the over-the-air overload indicator. Moreover, the method can include sending the report to a serving base station from the UE.

[0013] Another aspect relates to a wireless communications apparatus. The wireless communications apparatus can include a memory that retains instructions related to receiving an over-the-air overload indicator from a non-serving base station at a user equipment (UE), generating a report based upon the over-the-air overload indicator, and sending the report to a serving base station from the UE. Further, the wireless communications apparatus can include a processor, coupled to the memory, configured to execute the instructions retained in the memory.

[0014] Yet another aspect relates to a wireless communications apparatus that enables utilizing overload indicators in a wireless communication environment. The wireless communications apparatus can include means for receiving an over-the-air overload indicator from a non-serving base station at a user equipment (UE). Moreover, the wireless communications apparatus can include means for generating a report based upon the over-the-air overload indicator. Further, the wireless communications apparatus can include means for sending the report to a serving base station from the UE.

[0015] Still another aspect relates to a computer program product that can comprise a computer-readable medium. The computer-readable medium can include code for receiving an over-the-air overload indicator from a non-serving base station at a user equipment (UE). Moreover, the computer-readable medium can include code for generating a report based upon the over-the-air overload indicator. The computer-readable medium can further include code for sending the report to a serving base station from the UE.

[0016] In accordance with another aspect, a wireless communications apparatus can include a processor, wherein the processor can be configured to receive an over-the-air overload indicator from a non-serving base station at a user equipment (UE). Further, the processor can be configured to generate a report based upon the over-the-air overload indicator. Moreover, the processor can be configured to send the report to a serving base station from the UE.

[0017] According to other aspects, a method that facilitates responding to overload indicators in a wireless communication environment is described herein. The method can include receiving a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the UE from a non-serving base station. Moreover, the method can include generating a power control command for the UE based at least in part upon the report received from the UE.

[0018] Another aspect relates to a wireless communications apparatus. The wireless communications apparatus can include a memory that retains instructions related to receiving a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the UE from a non-serving base station, and generating a power control command for the UE based at least in part upon the report received from the UE. Further, the wireless communications apparatus can include a processor, coupled to the memory, configured to execute the instructions retained in the memory.

[0019] Yet another aspect relates to a wireless communications apparatus that enables employing overload indicators in a wireless communication environment. The wireless communications apparatus can include means for receiving a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the UE from a non-serving base station. Further, the wireless communications apparatus can include means for generating a power control command for the UE based at least in part upon the report received from the UE.

[0020] Still another aspect relates to a computer program product that can comprise a computer-readable medium. The computer-readable medium can include code for receiving a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the UE from a non-serving base station. Moreover, the computer-readable medium can include code for generating a power control command for the UE based at least in part upon the report received from the UE.

[0021] In accordance with another aspect, a wireless communications apparatus can include a processor, wherein the processor can be configured to receive a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the UE from a non-serving base station. Further, the processor can be configured to generate a power control command for the UE based at least in part upon the report received from the UE. Moreover, the processor can be configured to transmit the power control command to the UE over a downlink.

[0022] Toward the accomplishment of the foregoing and related ends, the one or more embodiments comprise the features hereinafter fully described and particularly pointed out in the claims. The following description and the annexed drawings set forth herein detail certain illustrative aspects of the one or more embodiments. These aspects are indicative, however, of but a few of the various ways in which the principles of various embodiments can be employed and the described embodiments are intended to include all such aspects and their equivalents.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] FIG. **1** is an illustration of a wireless communication system in accordance with various aspects set forth herein.

[0024] FIG. **2** is an illustration of an example system that employs over-the-air overload indicators and backhaul overload indicators in a wireless communication environment.

[0025] FIG. **3** is an illustration of an example system that selectively disables transmission of a backhaul overload indicator in a wireless communication environment.

[0026] FIG. **4** is an illustration of an example system that manages a type of overload indicator utilized by a UE in a wireless communication environment.

[0027] FIG. **5** is an illustration of an example methodology that facilitates responding to overload indicators in a wireless communication environment.

[0028] FIG. **6** is an illustration of an example methodology that facilitates responding to overload indicators in a wireless communication environment.

[0029] FIG. **7** is an illustration of an example system that enables utilizing overload indicators in a wireless communication environment.

[0030] FIG. **8** is an illustration of an example system that enables employing overload indicators in a wireless communication environment.

[0031] FIGS. **9-10** are illustrations of example systems that can be utilized to implement various aspects of the functionality described herein.

[0032] FIG. **11** is an illustration of an example wireless communication system that can be employed in conjunction with the various systems and methods described herein.

DETAILED DESCRIPTION

[0033] Various aspects of the claimed subject matter are now described with reference to the drawings, wherein like reference numerals are used to refer to like elements throughout. In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of one or more aspects. It may be evident, however, that such aspects(s) may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to facilitate describing one or more aspects.

[0034] As used in this application, the terms "component," "module," "system," and the like are intended to refer to a computer-related entity, either hardware, firmware, a combination of hardware and software, software, or software in execution. For example, a component can be, but is not limited to being, a process running on a processor, a processor, an integrated circuit, an object, an executable, a thread of execution, a program, and/or a computer. By way of illustration, both an application running on a computing device and the computing device can be a component. One or more components can reside within a process and/or thread of execution and a component can be localized on one computer and/or distributed between two or more computers. In addition, these components can execute from various computer readable media having various data structures stored thereon. The components can communicate by way of local and/or remote processes such as in accordance with a signal having one or more data packets (e.g., data from one component interacting with another component in a local system, distributed system, and/or across a network such as the Internet with other systems by way of the signal).

[0035] Various techniques described herein can be used for various wireless communication systems, such as Code Division Multiple Access (CDMA) systems, Time Division Multiple Access (TDMA) systems, Frequency Division Multiple Access (FDMA) systems, Orthogonal Frequency Division Multiple Access (OFDMA) systems, Single Carrier-Frequency Division Multiple Access (SC-FDMA) systems, and other such systems. The terms "system" and "network" are often used interchangeably. A CDMA system can implement a radio technology such as Universal Terrestrial Radio Access (UTRA), CDMA2000, etc. UTRA includes Wideband-CDMA (W-CDMA) and other variants of CDMA. CDMA2000 covers IS-2000, IS-95, and IS-856 standards. A TDMA system can implement a radio technology such as Global System for Mobile Communications (GSM). An OFDMA system can implement a radio technology such as Evolved UTRA (E-UTRA), Ultra Mobile Broadband (UMB), IEEE 802.11 (Wi-Fi), IEEE 802.16 (WiMAX), IEEE 802.20, Flash-OFDM, etc. UTRA and E-UTRA are part of Universal Mobile Telecommunication System (UMTS). 3GPP Long Term Evolution (LTE) is a release of UMTS, e.g., Release 8, that uses E-UTRA, which employs OFDMA on the downlink and SC-FDMA on the uplink. UTRA, E-UTRA, UMTS, LTE and GSM are described in documents from an organization named "3rd Generation Partnership Project" (3GPP). Additionally, CDMA2000 and UMB are described in documents from an organization named "3rd Generation Partnership Project 2" (3GPP2). Further, such wireless communication systems can additionally include peer-to-peer (e.g., mobile-to-mobile) ad hoc network systems often using unpaired unlicensed spectrums, 802.xx wireless LAN, BLUETOOTH and any other short- or long-range, wireless communication techniques.

[0036] Single Carrier-Frequency Division Multiple Access (SC-FDMA) utilizes single carrier modulation and frequency domain equalization. SC-FDMA has similar performance and essentially the same overall complexity as those of an OFDMA system. A SC-FDMA signal has lower peak-to-average power ratio (PAPR) because of its inherent single carrier structure. SC-FDMA can be used, for instance, in uplink communications where lower PAPR greatly benefits UEs in terms of transmit power efficiency. Accordingly, SC-FDMA can be implemented as an uplink multiple access scheme in 3GPP Long Term Evolution (LTE) or Evolved UTRA.

[0037] Furthermore, various aspects are described herein in connection with a user equipment (UE). A UE can refer to a device providing voice and/or data connectivity. A UE can be connected to a computing device such as a laptop computer or desktop computer, or it can be a self-contained device such as a personal digital assistant (PDA). A UE can also be called a system, subscriber unit, subscriber station, mobile station, mobile, remote station, remote terminal, mobile device, user terminal, terminal, wireless communication device, user agent, user device, or access terminal. A UE can be a cellular telephone, a cordless telephone, a Session Initiation Protocol (SIP) phone, a wireless local loop (WLL) station, a personal digital assistant (PDA), a handheld device having wireless connection capability, computing device, or other processing device connected to a wireless modem. Moreover, various aspects are described herein in connection with a base station. A base station can be utilized for communicating with UE(s) and can also be referred to as an access point, Node B, Evolved Node B (eNodeB, eNB) or some other terminology. A base station can refer to a device in an access network that communicates over the air interface, through one or more sectors, with UEs. The base station can act as a router between the wireless terminal and the rest of the access network, which can include an Internet Protocol (IP) network, by converting received air interface frames to IP packets. The base station can also coordinate management of attributes for the air interface.

[0038] Moreover, the term "or" is intended to mean an inclusive "or" rather than an exclusive "or." That is, unless specified otherwise, or clear from the context, the phrase "X employs A or B" is intended to mean any of the natural inclusive permutations. That is, the phrase "X employs A or B" is satisfied by any of the following instances: X employs A; X employs B; or X employs both A and B. In addition, the articles "a" and "an" as used in this application and the appended claims should generally be construed to mean "one or more" unless specified otherwise or clear from the context to be directed to a singular form.

[0039] Moreover, various functions described herein can be implemented in hardware, software, firmware, or any combination thereof. If implemented in software, the functions can be stored on or transmitted over as one or more instructions or code on a computer-readable medium. Computer-readable media includes both computer storage media and communication media including any medium that facilitates transfer of a computer program from one place to another. A storage media can be any available media that can be accessed by a computer. By way of example, and not limitation, such computer-readable media can comprise RAM, ROM, EEPROM, CD-ROM or other optical disk storage, magnetic disk storage or other magnetic storage devices, or any other medium that can be used to carry or store desired program code in the form of instructions or data structures and that can be accessed by a computer. Also, any connection is properly termed a computer-readable medium. For example, if the software is transmitted from a website, server, or other remote source using a coaxial cable, fiber optic cable, twisted pair, digital subscriber line (DSL), or wireless technologies such as infrared, radio, and microwave, then the coaxial cable, fiber optic cable, twisted pair, DSL, or wireless technologies such as infrared, radio, and microwave are included in the definition of medium. Disk and disc, as used herein, includes compact disc (CD), laser disc, optical disc, digital versatile disc (DVD), floppy disk and blu-ray disc (BD), where disks usually reproduce data magnetically and discs reproduce data optically with lasers. Combinations of the above should also be included within the scope of computer-readable media.

[0040] Various aspects will be presented in terms of systems that can include a number of devices, components, modules, and the like. It is to be understood and appreciated that the various systems can include additional devices, components, modules, etc. and/or one or more of the devices, components, modules, etc., discussed in connection with the figures need not be included. A combination of these approaches can also be used.

[0041] Referring now to FIG. **1**, a system **100** is illustrated in accordance with various aspects presented herein. System **100** comprises a base station **102** that can include multiple antenna groups. For example, one antenna group can include antennas **104** and **106**, another group can comprise antennas **108** and **110**, and an additional group can include antennas **112** and **114**. Two antennas are illustrated for each antenna group; however, more or fewer antennas can be utilized for each group. Base station **102** can additionally include a transmitter chain and a receiver chain, each of which can in turn comprise a plurality of components associated with signal transmission and reception (e.g., processors, modulators, multiplexers, demodulators, demultiplexers, antennas, etc.), as will be appreciated by one skilled in the art.

[0042] Base station **102** can communicate with one or more user equipments (UEs) such as UE **116** and UE **122**; however, it is to be appreciated that base station **102** can communicate with substantially any number of UEs similar to UE **116** and UE **122**. UE **116** and UE **122** can be, for example, cellular phones, smart phones, laptops, handheld communication devices, handheld computing devices, satellite radios, global positioning systems, PDAs, and/or any other suitable device for communicating over system **100**. As depicted, UE **116** is in communication with antennas **112** and **114**, where antennas **112** and **114** transmit information to UE **116** over a forward link **118** and receive information from UE **116** over a reverse link **120**. Moreover, UE **122** is in communication with antennas **104** and **106**, where antennas **104** and **106** transmit information to UE **122** over a forward link **124** and receive information from UE **122** over a reverse link **126**. In a frequency division duplex (FDD) system, forward link **118** can utilize a different frequency band than that used by reverse link **120**, and forward link **124** can employ a different frequency band than that employed by reverse link **126**, for example. Further, in a time division duplex (TDD) system, forward link **118** and reverse link **120** can utilize a common frequency band and forward link **124** and reverse link **126** can utilize a common frequency band.

[0043] Each group of antennas and/or the area in which they are designated to communicate can be referred to as a sector of base station **102**. For example, antenna groups can be designed to communicate to UEs in a sector of the areas covered by base station **102**. In communication over forward links **118** and **124**, the transmitting antennas of base station **102** can utilize beamforming to improve signal-to-noise ratio of forward links **118** and **124** for UE **116** and UE **122**. Also, while base station **102** utilizes beamforming to transmit to UE **116** and UE **122** scattered randomly through an associated coverage, UEs in neighboring cells can be subject to less interference as compared to a base station transmitting through a single antenna to all its UEs.

[0044] Over-the-air overload indicators and backhaul overload indicators can be present in system **100**. Further, behavior of base station **102**, UE **116**, UE **122**, disparate base station(s) (not shown), and disparate UE(s) (not shown) can support use of over-the-air overload indicators and backhaul overload indicators in system **100**. An over-the-air overload indicator can also be referred to as a Layer 1 (L1) overload indicator.

[0045] According to an example, base station **102** can measure uplink interference (e.g., caused by uplink transmission (s) by UE(s) served by disparate base station(s), . . .) plus thermal noise, and can generate an overload indicator based upon such measurement. The overload indicator can be a function of interference from UE(s) from other cells, and can lack information concerning traffic or interference generated by UE(s) in a serving cell (e.g., UE **116** or UE **122** served by base station **102**). Base station **102** can send the overload indicator to a disparate base station (not shown) via a backhaul; the overload indicator sent over the backhaul can be referred to as a backhaul overload indicator (backhaul OI). Additionally or alternatively, base station **102** can send the overload indicator over an air interface (e.g., on a downlink to a UE served by the disparate base station, to the disparate base station); the overload indicator sent over the air interface can be referred to as an over-the-air overload indicator (OTA OI).

[0046] By way of example, the backhaul overload indicator and/or the over-the-air overload indicator can include one bit that signifies whether base station **102** is overloaded (e.g., the one bit can distinguish between base station **102** being overloaded versus not overloaded). Pursuant to another example, the backhaul overload indicator and/or the over-the-air overload indicator can carry one of three possible values: namely, high interference, medium interference, or low interference. It is to be appreciated, however, that the claimed subject matter is not limited to the foregoing examples.

[0047] Conventional approaches typically leverage backhaul overload indicators sent over an X2 interface. Thus, backhaul overload indicators can be employed among base stations (e.g., exchanged between base station **102** and the disparate base station) in system **100** to support legacy UE(s)

(e.g., Release 8 UE(s)). Yet, system **100** can be a heterogeneous wireless communication system; thus, various base station(s) (e.g., femto cell base station(s)) in system **100** can lack a backhaul. Accordingly, over-the-air overload indicators can be employed (e.g., base station **102** can send the over-the-air overload indicators over the air interface on the downlink to Release 10 UE(s) served by the disparate base station). It is further contemplated that a Release 10 UE can be compatible with legacy approaches (e.g., Release 8 compatible).

[0048] Now referring to FIG. **2**, illustrated is a system **200** that employs over-the-air overload indicators and backhaul overload indicators in a wireless communication environment. System **200** includes a serving base station **202** that can transmit and/or receive information, signals, data, instructions, commands, bits, symbols, and the like. Serving base station **202** can communicate with a UE **204** via the forward link and/or reverse link. UE **204** can transmit and/or receive information, signals, data, instructions, commands, bits, symbols, and the like. Serving base station **202** can serve UE **204**. Further, system **200** can include a non-serving base station **206** that can transmit and/or receive information, signals, data, instructions, commands, bits, symbols, and the like. Moreover, although not shown, it is contemplated that any number of base stations similar to serving base station **202** and/or non-serving base station **206** can be included in system **200** and/or any number of UEs similar to UE **204** can be included in system **200**.

[0049] According to an example, UE **204** can be served by serving base station **202**. Following this example, when sending an uplink transmission to serving base station **202**, UE **204** can cause interference to non-serving base station **206** (e.g., associated with a neighboring cell). For instance, UE **204** can be positioned near an edge of a cell associated with serving base station **202**, such that UE **204** can be located close to the neighboring cell associated with non-serving base station **206**; yet, it is to be appreciated that the claimed subject matter is not so limited. Moreover, it is also to be appreciated, yet not shown, that serving base station **202** and non-serving base station **206** can be substantially similar (e.g., non-serving base station **206** can serve a different UE (not shown) that can cause interference to serving base station **202**).

[0050] Non-serving base station **206** can include a backhaul interface component **208**, an overload signaling component **210**, an interference monitoring component **212**, a transmission component **214**, and/or a reception component **216**. Transmission component **214** and reception component **216** can respectively send and receive signals over an air interface. Moreover, backhaul interface component **208** can exchange messages with a disparate base station (e.g., serving base station **202**) over a backhaul (e.g., an X2 interface).

[0051] Reception component **216** can receive an uplink transmission sent from UE **204**. Since UE **204** can be served by serving base station **202**, the uplink transmission received by reception component **216** of non-serving base station **206** can be uplink interference. Moreover, although not shown, it is contemplated that reception component **216** can receive uplink transmission(s) sent from disparate UE(s). The disparate UE(s) can include UE(s) served by non-serving base station **206** and/or UE(s) served by base station(s) (e.g., serving base station **202**, differing base station(s) (not shown)) other than non-serving base station **206**. Uplink transmission (s) received by reception component **216** of non-serving base station **206** from UE(s) served by base station(s) other than non-serving base station **206** can also be uplink interference.

[0052] Interference monitoring component **212** can measure the uplink interference cause by UE(s) served by base station(s) other than non-serving base station **206** obtained by reception component **216** of non-serving base station **206**. For instance, interference monitoring component **212** can measure an interference over thermal (IoT) level. By way of example, interference monitoring component **212** can measure an uplink interference level of the uplink transmission sent by UE **204** (as well as other uplink transmission(s) sent by other UE(s) in neighboring cell(s)).

[0053] Further, overload signaling component **210** can compare the interference level measured by interference monitoring component **212** to a threshold (or a set of thresholds). Overload signaling component **210** can set a value for overload indicator(s) based upon the comparison. For example, the value set by overload signaling component **210** can be one of overloaded or not overloaded (e.g., conveyed by one bit). Following this example, if the interference level measured by interference monitoring component **212** exceeds a threshold, then non-serving base station **206** can be recognized as being overloaded and the value set by overload signaling component **210** can signify that non-serving base station **206** is overloaded. Otherwise, if the interference level measured by interference monitoring component **212** is less than or equal to the threshold, then non-serving base station **206** can be recognized as being not overloaded and the value set by overload signaling component **210** can signify that non-serving base station **206** is not overloaded. By way of another example, the value set by overload signaling component **210** can be one of high interference, medium interference, or low interference (e.g., the interference level measured by interference monitoring component **212** can be compared to two thresholds). Yet, it is to be appreciated that the claimed subject matter is not limited to the foregoing examples.

[0054] Overload signaling component **210** can generate an over-the-air overload indicator and/or a backhaul overload indicator, each of which can include the set value (e.g., overloaded versus not overloaded, high interference versus medium interference versus low interference). According to various examples described herein, overload signaling component **210** can generate both an over-the-air overload indicator and a backhaul overload indicator. Pursuant to other examples set forth herein, overload signaling component **210** can generate an over-the-air overload indicator without generating a backhaul overload indicator. Yet, it is also contemplated that overload signaling component **210** can generate a backhaul overload indicator without generating an over-the-air overload indicator. While overload signaling component **210** is described as generating an over-the-air overload indicator and/or a backhaul overload indicator, it is to be appreciated that separate components can respectively yield an over-the-air overload indicator and a backhaul overload indicator (not shown).

[0055] Pursuant to the example depicted in FIG. **2**, overload signaling component **210** can generate both an over-the-air overload indicator and a backhaul overload indicator. Further to this example, transmission component **214** can send the over-the-air overload indicator (OTA OI) over the air interface (e.g., on the downlink) Moreover, backhaul interface component **208** can send the backhaul overload indicator (backhaul OI) over the X2 interface.

[0056] Serving base station **202** can include a backhaul interface component **218**, a report analysis component **220**, a command generation component **222**, a reception component **224**, and/or a transmission component **226**. Transmission component **226** can send signals over the air interface and reception component **224** can receive signals over the air interface. Further, backhaul interface component **218** can exchange messages over the backhaul (e.g., the X2 interface).

[0057] For example, backhaul interface component **218** can receive the backhaul overload indicator sent from non-serving base station **206** over the X2 interface. Command generation component **222** can yield a power control command based at least in part upon the backhaul overload indicator received by backhaul interface component **218** from non-serving base station **206**. Yet, the power control command can also be generated based at least in part upon a report received from UE **204** as described below. The power control command yielded by command generation component **222** can manage an adjustment of a transmit power spectral density (PSD) of UE **204**. Further, the power control command generated by command generation component **222** can be sent in a Physical Downlink Control Channel (PDCCH), which can be sent by transmission component **226** to UE **204**.

[0058] For example, command generation component **222** can cause respective transmit PSD(s) of UE(s) (e.g., UE **204**, disparate UE(s) (not shown)) being served by serving base station **202** to be reduced upon backhaul interface component **218** receiving a backhaul overload indicator that signifies that non-serving base station **206** is overloaded. Command generation component **222** can cause reduction in transmit PSD (s) by yielding respective power control command(s) for the UE(s).

[0059] By way of yet another example, an amount of PSD reduction for UE **204** in response to receipt of the backhaul overload indicator by backhaul interface component **218** from non-serving base station **206** can depend on an amount of interference caused by UE **204**. Following this example, the amount of PSD reduction can be a function of a difference in path loss from UE **204** to serving base station **202** versus from UE **204** to non-serving base station **206**. The difference in path loss, for instance, can be computed by command generation component **222** based on a measurement report from UE **204**.

[0060] Moreover, UE **204** can include a transmission component **228**, a reception component **230**, a feedback component **232**, and/or a power management component **234**. Transmission component **228** can send signals over the air interface and reception component **230** can receive signals over the air interface. As described above, transmission component **228** can send the uplink transmission to serving base station **202**, for example; the uplink transmission sent to serving base station **202** can cause uplink interference to non-serving base station **206** (e.g., obtained by reception component **216**, measured by interference monitoring component **212**).

[0061] Further, reception component **230** can receive the over-the-air overload indicator sent by non-serving base station **206** (e.g., yielded by overload signaling component **210** and sent by transmission component **214**). Power management component **234** can adjust a transmit PSD of UE **204** based upon the over-the-air overload indicator received by reception component **230** from non-serving base station **206**. Adjustment of the transmit PSD of UE **204** as a function of the over-the-air overload indicator can be faster than adjustment of the transmit PSD of UE **204** based upon a power control command formed at serving base station **202** by command generation component **222** as a function of the backhaul overload indicator. For instance, adjustment of the transmit PSD of UE **204** based upon the over-the-air overload indicator can be faster due to backhaul delay associated with the backhaul overload indicator, delay associated with power control command generation (e.g., by command generation component **222**), and so forth.

[0062] Feedback component **232** can yield a report that includes power related information concerning UE **204** that can be sent by transmission component **228** to serving base station **202**. For example, the report generated by feedback component **232** can include information related to the over-the-air overload indicator (e.g., received by reception component **230** from non-serving base station **206**, whether non-serving base station **206** is overloaded versus not overloaded, whether non-serving base station **206** is experiencing high interference versus medium interference versus low interference), the transmit PSD after the adjustment (e.g., by power management component **234**) based upon the over-the-air overload indicator, a power headroom (e.g., difference between a maximum transmit PSD and the transmit PSD after the adjustment), a combination thereof, and so forth.

[0063] Reception component **224** of serving base station **202** can receive the report generated by feedback component **232** of UE **204**. Further, report analysis component **220** can evaluate the report and can cause command generation component **222** to generate the power control command for UE **204** as a function of the report sent from UE **204** as well as the backhaul overload indicator received by backhaul interface component **218** from non-serving base station **206** over the X2 interface. Thus, command generation component **222** can issue the power control command by taking the report from UE **204** into consideration.

[0064] The following is an illustration depicting operation of system **200**. UE **204** can send an uplink transmission (e.g., using transmission component **228**) to serving base station **202**, which can cause interference (e.g., uplink interference) at non-serving base station **206**. Interference monitoring component **212** of non-serving base station **206** can measure the interference received (e.g., by reception component **216**, from UE **204**, from disparate UE(s) not served by non-serving base station **206**) at non-serving base station **206**. Moreover, overload signaling component **210** can generate an over-the-air overload indicator and a backhaul overload indicator that include a value set as a function of the measured interference. For instance, the over-the-air overload indicator and the backhaul overload indicator can carry the same value (e.g., non-serving base station **206** is overloaded versus not overloaded, non-serving base station **206** is experiencing high interference versus medium interference versus low interference). Further, transmission component **214** can send the over-the-air overload indicator over the air interface to UE **204**, and backhaul interface component **208** can send the backhaul overload indicator over the backhaul (e.g., X2 interface) to serving base station **202**.

[0065] Reception component **230** of UE **204** can receive the over-the-air overload indicator, and power management component **234** can adjust a transmit PSD of UE **204** based upon the over-the-air overload indicator. For instance, if the over-the-air overload indicator specifies that non-serving base station **206** is overloaded, then power management component **234** can reduce the transmit PSD of UE **204**. The amount of

the transmit PSD reduction as controlled by power management component **234** can depend on an amount of interference caused by UE **204** (e.g., which can be a function of a difference in path loss from UE **204** to serving base station **202** versus from UE **204** to non-serving base station **206**). According to another example, if the over-the-air overload indicator specifies that non-serving base station **206** is not overloaded, then power management component **234** can increase the transmit PSD of UE **204** or inhibit adjusting the transmit PSD of UE **204** (e.g., depending on the power headroom of UE **204**). Moreover, feedback component **232** can form a report that includes power related information concerning UE **204**; the power related information can include information pertaining to the over-the-air overload indicator, the transmit PSD after the adjustment by power management component **234** based upon the over-the-air overload indicator, the power headroom, a combination thereof, and so forth. The report can be sent by transmission component **228** over the uplink to serving base station **202**.

[0066] Reception component **224** of serving base station **202** can receive the report generated by feedback component **232** of UE **204**. Moreover, backhaul interface component **218** can receive the backhaul overload indicator sent by non-serving base station **206**. Report analysis component **220** can evaluate the report obtained from UE **204**. Further, command generation component **222** can yield a power control command for UE **204** based upon the backhaul overload indicator and the report obtained from UE **204** as evaluated by report analysis component **220**.

[0067] For example, report analysis component **220** can recognize from the report that UE **204** received the over-the-air overload indicator, the over-the-air overload indicator included a value signifying that non-serving base station **206** is overloaded, and a transmit PSD of UE **204** after adjustment based upon the over-the-air overload indicator. Following this example, command generation component **222** can identify that the backhaul overload indicator similarly includes a value signifying that non-serving base station **206** is overloaded. Thus, command generation component **222** can evaluate whether to issue a power control command that causes further adjustment of the transmit PSD of UE **204**. Accordingly, command generation component **222** can mitigate improperly over adjusting the transmit PSD of UE **204** (e.g., adjusting the transmit PSD of UE **204** a second time based upon the backhaul overload indicator when power management component **234** already adjusted the transmit PSD of UE **204** based upon the over-the-air overload indicator where the backhaul overload indicator and the over-the-air overload indicator are concurrently supplied by non-serving base station **206**).

[0068] According to another example, report analysis component **220** can recognize from the report that UE **204** received the over-the-air overload indicator, the overload indicator included a value signifying that non-serving base station **206** is not overloaded, a transmit power PSD of UE **204** after an increase based upon the over-the-air overload indicator, and a power headroom. Pursuant to this example, command generation component **222** can recognize that the backhaul overload indicator similarly includes a value signifying that non-serving base station **206** is not overloaded. Thus, command generation component **222** can evaluate whether to issue a power control command that causes further adjustment of the transmit PSD of UE **204**. Accordingly, command generation component **222** can mitigate improperly over adjusting the transmit PSD of UE **204** (e.g., adjusting the transmit PSD of UE **204** a second time based upon the backhaul overload indicator when power management component **234** already adjusted the transmit PSD of UE **204** based upon the over-the-air overload indicator where the backhaul overload indicator and the over-the-air overload indicator are concurrently supplied by non-serving base station **206**).

[0069] In accordance with yet another example, report analysis component **220** can recognize from the report that UE **204** received the over-the-air overload indicator, the overload indicator included a value signifying that non-serving base station **206** is not overloaded, a transmit power PSD of UE **204** remained unaltered based upon the over-the-air overload indicator, and a power headroom. Pursuant to this example, command generation component **222** can recognize that the backhaul overload indicator similarly includes a value signifying that non-serving base station **206** is not overloaded. Thus, command generation component **222** can evaluate whether to issue a power control command that causes the transmit PSD of UE **204** to be adjusted (e.g., the evaluation can be based at least in part upon the power headroom).

[0070] Now turning to FIG. **3**, illustrated is a system **300** that selectively disables transmission of a backhaul overload indicator in a wireless communication environment. System **300** includes serving base station **202**, non-serving base station **206**, UE **204**, and a legacy UE **302**. Serving base station **202** can include backhaul interface component **218**, report analysis component **220**, command generation component **222**, reception component **224**, and/or transmission component **226** as described herein. Further, non-serving base station **206** can include backhaul interface component **208**, overload signaling component **210**, interference monitoring component **212**, transmission component **214**, and/or reception component **216** as set forth herein. Moreover, UE **204** can include transmission component **228**, reception component **230**, feedback component **232**, and/or power management component **234** as described herein.

[0071] Legacy UE **302**, for example, can be a Release 8 UE. Moreover, legacy UE **302** can be served by serving base station **202**. Although not shown, it is contemplated that legacy UE **302** can include a transmission component (e.g., similar to transmission component **228** of UE **204**) that sends a transmission over the air interface, a reception component (e.g., similar to reception component **230** of UE **204**) that receives a transmission over the air interface, and a power management component (e.g., similar to power management component **234** of UE **204**) that adjusts a transmit PSD of legacy UE **302** based upon a power control command received from serving base station **202** (e.g., issued by command generation component **222** in response to a backhaul overload indicator received by serving base station **202**). Legacy UE **302**, however, can be unable to receive an over-the-air overload indicator sent by non-serving base station **206**.

[0072] Further, legacy UE **302** can be in a state **304**. According to an example, state **304** can be one of Radio Resource Control IDLE (RRC_IDLE) state (e.g., idle state) or RRC_CONNECTED state (e.g., active state). In RRC_IDLE state, legacy UE **302** can monitor a paging channel to detect incoming calls, acquire system information, and perform neighboring cell measurement and cell selection (cell reselection). In RRC_CONNECTED state, legacy UE **302**

can send data to or receive data from a network; thus, legacy UE **302** can monitor control channels associated with a shared data channel to determine if legacy UE **302** is scheduled for uplink or downlink data transmission, and can provide channel quality and feedback information to serving base station **202**. Further, in RRC_CONNECTED state, legacy UE **302** can perform neighboring cell measurement and measurement reporting based on a configuration provided by serving base station **202**.

[0073] Serving base station **202** can further include a state signaling component **306**. State signaling component **306** can monitor state **304** of legacy UE **302**. Moreover, state signaling component **306** can monitor respective state(s) of other legacy UE(s) (not shown) served by serving base station **202**. Further, state signaling component **306** can signal information that indicates the state(s) (e.g., state **304**, respective state (s) of the other legacy UE(s) served by serving base station **202**) of the legacy UE(s) (e.g., legacy UE **302**, the other legacy UE(s) served by serving base station **202**). The information can be transmitted over the backhaul by backhaul interface component **218** to neighboring base station(s) (e.g., non-serving base station **206**).

[0074] Further, the information can be received by backhaul interface component **208** of non-serving base station **206**. Moreover, non-serving base station **206** can include a backhaul control component **308** that can manage transmission of a backhaul overload indicator over the X2 interface based upon the information.

[0075] For example, state signaling component **306** can detect that serving base station **202** is not serving a legacy UE in RRC_CONNECTED state (e.g., serving base station **202** is not serving a legacy UE, legacy UE **302** and/or other legacy UE(s) served by serving base station **202** are in RRC_IDLE state). Following this example, state signaling component **306** can signal information to neighboring base station(s) (e.g., non-serving base station **206**), where the information can indicate that no legacy UE is served by serving base station **202** and is in RRC_CONNECTED state. The information can be sent over the backhaul by backhaul interface component **218**. Backhaul interface component **208** of non-serving base station **206** can receive the information from serving base station **202**, and backhaul control component **308** can cause non-serving base station **206** to inhibit sending a backhaul overload indicator via the backhaul when the information indicates that no legacy UE is served by serving base station **202** and is in RRC_CONNECTED state. According to this example, an over-the-air overload indicator can be yielded by overload signaling component **210**; the over-the-air overload indicator can be sent over an air interface by transmission component **214** to non-legacy UE(s) (e.g., UE **204**) without backhaul interface component **208** sending a backhaul overload indicator. By inhibiting transmission of the backhaul overload indicator, backhaul capacity can be saved.

[0076] By way of another example, state signaling component **306** can detect that serving base station is serving a legacy UE in RRC_CONNECTED state (e.g., legacy UE **302** is in RRC_CONNECTED state). State signaling component **306** can signal information to neighboring base station(s) (e.g., non-serving base station **206**) that indicates that a legacy UE (e.g., legacy UE **302**) served by serving base station **202** is in RRC_CONNECTED state. The information can be transmitted over the backhaul by backhaul interface component **218**. Backhaul interface component **208** of non-serving base station **206** can receive the information from serving base station **202**, and backhaul control component **308** can cause non-serving base station to send a backhaul overload indicator via the backhaul when the information indicates that a legacy UE served by serving base station **202** is in RRC_CONNECTED state. In accordance with this example, both an over-the-air overload indicator and a backhaul overload indicator can be yielded by overload signaling component **210**. Hence, the over-the-air overload indicator can be sent over an air interface by transmission component **214** and the backhaul overload indicator can be sent over the backhaul by backhaul interface component **208**. It is contemplated that this example can be similar to the example scenario described in connection with FIG. **2** where both the over-the-air overload indicator and the backhaul overload indicator are sent by non-serving base station **206**.

[0077] Referring to FIG. **4**, illustrated is a system **400** that manages a type of overload indicator utilized by a UE in a wireless communication environment. System **400** includes serving base station **202**, non-serving base station **206**, and UE **204**. Serving base station **202** can include backhaul interface component **218**, report analysis component **220**, command generation component **222**, reception component **224**, and/or transmission component **226** as described herein. Further, non-serving base station **206** can include backhaul interface component **208**, overload signaling component **210**, interference monitoring component **212**, transmission component **214**, and/or reception component **216** as set forth herein. Moreover, UE **204** can include transmission component **228**, reception component **230**, and/or power management component **234** as described herein. Although not shown, it is contemplated that UE **204** can further include a feedback component (e.g., feedback component **232** of FIG. **2**).

[0078] Serving base station **202** can further include a UE management component **402** that can configure UE **204**, which is served by serving base station **202**, to either employ or ignore an over-the-air overload indicator received thereby. According to an example, if UE management component **402** configures UE **204** to employ received over-the-air overload indicators, then this example can be similar to the example scenario described in connection with FIG. **2** where both the over-the-air overload indicator and the backhaul overload indicator are sent by non-serving base station **206**.

[0079] Pursuant to another example, UE management component **402** can configure UE **204** to ignore over-the-air overload indicators. For instance, configuration information can be sent over the air interface by transmission component **226** to UE **204**. Reception component **230** of UE **204** can obtain the configuration information. Moreover, UE **204** can include an OTA disabling component **404** that can cause UE **204** to selectively ignore over-the-air overload indicators based upon the configuration information received from serving base station **202**. For example, non-serving base station **206** can generate and send both an over-the-air overload indicator and a backhaul overload indicator; however, power management component **234** of UE **204** can inhibit adjusting a transmit PSD of UE **204** based upon the over-the-air overload indicator when OTA disabling component **404** is configured to selectively ignore over-the-air overload indicators. Yet, the claimed subject matter is not limited to the aforementioned example as it is contemplated that non-serving base station **206** need not generate and send the over-the-air overload indicator under such scenario.

[0080] When UE **204** is configured to ignore over-the-air overload indicators (e.g., sent by non-serving base station **206**), adjustment of a transmit PSD of UE **204** can be effectuated based upon a power control command received from serving base station **202**. Further, the power control command can be yielded by command generation component **222** of serving base station as a function of a backhaul overload indicator exchanged over the X2 interface from non-serving base station **206**.

[0081] Disabling use of over-the-air overload indicators by UE **204** can cause UE **204** (e.g., Release 9/10 UE) to behave similarly to a legacy UE (e.g., legacy UE **302** of FIG. **3**, Release 8 UE); thus, UE **204** can degenerate to providing similar capabilities as compared to a legacy UE. Yet, overhead on L1 capacity can be saved by disabling use of the over-the-air overload indicators.

[0082] Referring to FIGS. **5-6**, methodologies relating to responding to overload indicator(s) in a wireless communication environment are illustrated. While, for purposes of simplicity of explanation, the methodologies are shown and described as a series of acts, it is to be understood and appreciated that the methodologies are not limited by the order of acts, as some acts can, in accordance with one or more embodiments, occur in different orders and/or concurrently with other acts from that shown and described herein. For example, those skilled in the art will understand and appreciate that a methodology could alternatively be represented as a series of interrelated states or events, such as in a state diagram. Moreover, not all illustrated acts can be required to implement a methodology in accordance with one or more embodiments.

[0083] With reference to FIG. **5**, illustrated is a methodology **500** that facilitates responding to overload indicators in a wireless communication environment. At **502**, an over-the-air overload indicator can be received from a non-serving base station at a user equipment (UE). The over-the-air overload indicator can specify that the non-serving base station is one of overloaded or not overloaded, for instance. According to another example, the over-the-air overload indicator can specify that the non-serving base station is experiencing one of high interference, medium interference, or low interference. At **504**, a report can be generated based upon the over-the-air overload indicator. For example, the report can include information related to at least one of the over-the-air overload indicator, a transmit power spectral density (PSD) of the UE after being adjusted based upon the over-the-air overload indicator, or a power headroom of the UE. According to an example, a transmit PSD of the UE can be adjusted based upon the over-the-air overload indicator received from the non-serving base station. At **506**, the report can be sent to a serving base station from the UE.

[0084] Pursuant to another example, a power control command can be received from the serving base station at the UE. Following this example, the power control command can be a function of a backhaul overload indicator received by the serving base station from the non-serving base station and the report sent by the UE. For instance, the power control command can be received in a Physical Downlink Control Channel (PDCCH) from the serving base station. Further, a transmit PSD of the UE can be adjusted based upon the power control command.

[0085] By way of yet another example, the UE can be configured by the serving base station to ignore the over-the-air overload indicator sent from the non-serving base station. Thus, a power control command can be received from the serving base station at the UE, wherein the power control command can be a function of a backhaul overload indicator received by the serving base station from the non-serving base station. Moreover, a transmit PSD of the UE can be adjusted based upon the power control command without alteration based upon the over-the-air overload indicator sent from the non-serving base station.

[0086] Now turning to FIG. **6**, illustrated is a methodology **600** that facilitates responding to overload indicators in a wireless communication environment. At **602**, a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the UE from a non-serving base station can be received. For example, the report can include information related to at least one of the over-the-air overload indicator, a transmit power spectral density (PSD) of the UE after being adjusted based upon the over-the-air overload indicator, or a power headroom of the UE. At **604**, a power control command for the UE can be generated based at least in part upon the report received from the UE. By way of example, the power control command for the UE can further be generated based upon a backhaul overload indicator received from the non-serving base station over a backhaul. Moreover, the power control command can be transmitted to the UE over a downlink in a Physical Downlink Control Channel (PDCCH).

[0087] According to another example, the UE can be configured by the serving base station to ignore the over-the-air overload indicator received by the UE from the non-serving base station. In accordance with this example, the power control command for the UE can be generated based upon the backhaul overload indicator received from the non-serving base station over the backhaul.

[0088] By way of yet another example, information can be signaled to the non-serving base station that selectively causes the non-serving base station to either send or inhibit sending a backhaul overload indicator over a backhaul as a function of served UE type (e.g., legacy UE versus non-legacy UE) and state (e.g., active state versus idle state, RRC_CONNECTED state versus RRC_IDLE state). Following this example, a determination can be effectuated concerning whether the serving base station serves at least one legacy UE (e.g., Release 8 UE). If the serving base station is recognized as not serving at least one legacy UE, then the serving base station can signal information to the non-serving base station that causes the non-serving base station to inhibit sending the backhaul overload indicator over the backhaul. If the serving base station is recognized as serving at least one legacy UE, then respective states of the at least one legacy UE can be determined. If none of the at least one legacy UE served by the serving base station is recognized as being in an active state (e.g., RRC_CONNECTED state), then the serving base station can signal information to the non-serving base station that causes the non-serving base station to inhibit sending the backhaul overload indicator over the backhaul. Alternatively, if one or more of the at least one legacy UE served by the serving base station is recognized as being in active state (e.g., RRC_CONNECTED state), then the serving base station can signal information to the non-serving base station that causes the non-serving base station to send the backhaul overload indicator over the backhaul.

[0089] It will be appreciated that, in accordance with one or more aspects described herein, inferences can be made pertaining to employing over-the-air overload indicators and/or

backhaul overload indicators in a wireless communication environment. As used herein, the term to "infer" or "inference" refers generally to the process of reasoning about or inferring states of the system, environment, and/or user from a set of observations as captured via events and/or data. Inference can be employed to identify a specific context or action, or can generate a probability distribution over states, for example. The inference can be probabilistic—that is, the computation of a probability distribution over states of interest based on a consideration of data and events. Inference can also refer to techniques employed for composing higher-level events from a set of events and/or data. Such inference results in the construction of new events or actions from a set of observed events and/or stored event data, whether or not the events are correlated in close temporal proximity, and whether the events and data come from one or several event and data sources.

[0090] With reference to FIG. **7**, illustrated is a system **700** that enables utilizing overload indicators in a wireless communication environment. For example, system **700** can reside within a UE. It is to be appreciated that system **700** is represented as including functional blocks, which can be functional blocks that represent functions implemented by a processor, software, or combination thereof (e.g., firmware). System **700** includes a logical grouping **702** of electrical components that can act in conjunction. For instance, logical grouping **702** can include an electrical component for receiving an over-the-air overload indicator from a non-serving base station at a user equipment (UE) **704**. Further, logical grouping **702** can include an electrical component for generating a report based upon the over-the-air overload indicator **706**. Moreover, logical grouping **702** can include an electrical component for sending the report to a serving base station from the UE **708**. Logical grouping **702** can also optionally include an electrical component for adjusting a transmit power spectral density (PSD) of the UE based upon the over-the-air overload indicator received from the non-serving base station **710**. Moreover, logical grouping **702** can optionally include an electrical component for adjusting a transmit power spectral density (PSD) of the UE based upon a power control command received from the serving base station, wherein the power control command can be a function of the report and a backhaul overload indicator received by the serving base station from the non-serving base station **712**. Additionally, system **700** can include a memory **714** that retains instructions for executing functions associated with electrical components **704**, **706**, **708**, **710**, and **712**. While shown as being external to memory **714**, it is to be understood that one or more of electrical components **704**, **706**, **708**, **710**, and **712** can exist within memory **714**.

[0091] With reference to FIG. **8**, illustrated is a system **800** that enables employing overload indicators in a wireless communication environment. For example, system **800** can reside at least partially within a base station. It is to be appreciated that system **800** is represented as including functional blocks, which can be functional blocks that represent functions implemented by a processor, software, or combination thereof (e.g., firmware). System **800** includes a logical grouping **802** of electrical components that can act in conjunction. For instance, logical grouping **802** can include an electrical component for receiving a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the UE from a non-serving base station **804**. Further, logical grouping **802** can include an electrical component for generating a power control command for the UE based at least in part upon the report received from the UE **806**. Logical grouping **802** can also optionally include an electrical component for generating the power control command for the UE further based upon a backhaul overload indicator received from the non-serving base station over a backhaul **808**. Moreover, logical grouping **802** can optionally include an electrical component for configuring the UE to ignore the over-the-air overload indicator received by the UE from the non-serving base station **810**. Further, logical grouping **802** can optionally include an electrical component for signaling information to the non-serving base station that selectively causes the non-serving base station to one of send or inhibit sending a backhaul overload indicator over a backhaul as a function of served UE type and state **812**. Additionally, system **800** can include a memory **814** that retains instructions for executing functions associated with electrical components **804**, **806**, **808**, **810**, and **812**. While shown as being external to memory **814**, it is to be understood that one or more of electrical components **804**, **806**, **808**, **810**, and **812** can exist within memory **814**.

[0092] FIG. **9** is an illustration of a system **900** that can be utilized to implement various aspects of the functionality described herein. System **900** can include a base station **902** (e.g., serving base station **202**, non-serving base station **206**). Base station **902** can receive signal(s) from one or more UEs **904** via one or more receive (Rx) antennas **906** and transmit to the one or more UEs **904** via one or more transmit (Tx) antennas **908**. Further, base station **902** can include a receiver **910** that receives information from receive antenna(s) **906**. According to an example, receiver **910** can be operatively associated with a demodulator (demod) **912** that demodulates received information. Demodulated symbols can be analyzed by a processor **914**. Processor **914** can be coupled to memory **916**, which can store data to be transmitted to or received from UE(s) **904** and/or any other suitable protocols, algorithms, information, etc. related to performing the various actions and functions set forth herein. For example, base station **902** can employ processor **914** to perform methodology **600** and/or other similar and appropriate methodologies. Base station **902** can further include a modulator **918** that can multiplex a signal for transmission by a transmitter **920** through antenna(s) **908**.

[0093] Processor **914** can be a processor dedicated to analyzing information received by receiver **910**, dedicated to generating information for transmission by transmitter **920**, or dedicated to controlling one or more components of base station **902**. According to another example, processor **914** can analyze information received by receiver **910**, generate information for transmission by transmitter **920**, and control one or more components of base station **902**. The one or more components of base station **902** can include, for example, backhaul interface component **218** (e.g., backhaul interface component **208**), report analysis component **220**, command generation component **222**, reception component **224** (e.g., reception component **216**), transmission component **226** (e.g., transmission component **214**), overload signaling component **210**, interference monitoring component **212**, state signaling component **306**, backhaul control component **308**, and/or UE management component **402**. Moreover, although not shown, it is contemplated that the one or more components of base station **902** can be part of processor **914** or a plurality of processors (not shown).

[0094] FIG. **10** is an illustration of a system **1000** that can be utilized to implement various aspects of the functionality described herein. System **1000** can include a UE **1002** (e.g., UE **204**, legacy UE **302**). UE **1002** can receive signal(s) from one or more base stations **1004** and/or transmit to one or more base stations **1004** via one or more antennas **1006**. Further, UE **1002** can include a receiver **1008** that receives information from antenna(s) **1006**. According to an example, receiver **1008** can be operatively associated with a demodulator (demod) **1010** that demodulates received information. Demodulated symbols can be analyzed by a processor **1012**. Processor **1012** can be coupled to memory **1014**, which can store data to be transmitted to or received from base station(s) **1004** and/or any other suitable protocols, algorithms, information, etc. related to performing the various actions and functions set forth herein. For example, UE **1002** can employ processor **1012** to perform methodology **500** and/or other similar and appropriate methodologies. UE **1002** can further include a modulator **1016** that can multiplex a signal for transmission by a transmitter **1018** through antenna(s) **1006**.

[0095] Processor **1012** can be a processor dedicated to analyzing information received by receiver **1008**, dedicated to generating information for transmission by transmitter **1018**, or dedicated to controlling one or more components of UE **1002**. According to another example, processor **1012** can analyze information received by receiver **1008**, generate information for transmission by transmitter **1018**, and control one or more components of UE **1002**. The one or more components of UE **1002** can include, for example, transmission component **228**, reception component **230**, feedback component **232**, power management component **234**, and/or OTA disabling component **404**. Moreover, although not shown, it is contemplated that the one or more components of UE **1002** can be part of processor **1012** or a plurality of processors (not shown).

[0096] FIG. **11** shows an example wireless communication system **1100**. Wireless communication system **1100** depicts one base station **1110** and one UE **1150** for sake of brevity. However, it is to be appreciated that system **1100** can include more than one base station and/or more than one UE, wherein additional base stations and/or UEs can be substantially similar or different from example base station **1110** and UE **1150** described below. In addition, it is to be appreciated that base station **1110** and/or UE **1150** can employ the systems (FIGS. **1-4** and **7-10**) and/or methods (FIGS. **5-6**) described herein to facilitate wireless communication therebetween.

[0097] At base station **1110**, traffic data for a number of data streams is provided from a data source **1112** to a transmit (TX) data processor **1114**. According to an example, each data stream can be transmitted over a respective antenna. TX data processor **1114** formats, codes, and interleaves the traffic data stream based on a particular coding scheme selected for that data stream to provide coded data.

[0098] The coded data for each data stream can be multiplexed with pilot data using Orthogonal Frequency Division Multiplexing (OFDM) techniques. Additionally or alternatively, the pilot symbols can be Frequency Division Multiplexed (FDM), Time Division Multiplexed (TDM), or Code Division Multiplexed (CDM). The pilot data is typically a known data pattern that is processed in a known manner and can be used at UE **1150** to estimate channel response. The multiplexed pilot and coded data for each data stream can be modulated (e.g., symbol mapped) based on a particular modulation scheme (e.g., binary phase-shift keying (BPSK), quadrature phase-shift keying (QPSK), M-phase-shift keying (M-PSK), M-quadrature amplitude modulation (M-QAM), etc.) selected for that data stream to provide modulation symbols. The data rate, coding, and modulation for each data stream can be determined by instructions performed or provided by processor **1130**.

[0099] The modulation symbols for the data streams can be provided to a TX MIMO processor **1120**, which can further process the modulation symbols (e.g., for OFDM). TX MIMO processor **1120** then provides N_T modulation symbol streams to N_T transmitters (TMTR) **1122***a* through **1122***t*. In various embodiments, TX MIMO processor **1120** applies beamforming weights to the symbols of the data streams and to the antenna from which the symbol is being transmitted.

[0100] Each transmitter **1122** receives and processes a respective symbol stream to provide one or more analog signals, and further conditions (e.g., amplifies, filters, and upconverts) the analog signals to provide a modulated signal suitable for transmission over the MIMO channel. Further, N_T modulated signals from transmitters **1122***a* through **1122***t* are transmitted from N_T antennas **1124***a* through **1124***t*, respectively.

[0101] At UE **1150**, the transmitted modulated signals are received by N_R antennas **1152***a* through **1152***r* and the received signal from each antenna **1152** is provided to a respective receiver (RCVR) **1154***a* through **1154***r*. Each receiver **1154** conditions (e.g., filters, amplifies, and downconverts) a respective signal, digitizes the conditioned signal to provide samples, and further processes the samples to provide a corresponding "received" symbol stream.

[0102] An RX data processor **1160** can receive and process the N_R received symbol streams from N_R receivers **1154** based on a particular receiver processing technique to provide N_T "detected" symbol streams. RX data processor **1160** can demodulate, deinterleave, and decode each detected symbol stream to recover the traffic data for the data stream. The processing by RX data processor **1160** is complementary to that performed by TX MIMO processor **1120** and TX data processor **1114** at base station **1110**.

[0103] A processor **1170** can periodically determine which available technology to utilize as discussed above. Further, processor **1170** can formulate a reverse link message comprising a matrix index portion and a rank value portion.

[0104] The reverse link message can comprise various types of information regarding the communication link and/or the received data stream. The reverse link message can be processed by a TX data processor **1138**, which also receives traffic data for a number of data streams from a data source **1136**, modulated by a modulator **1180**, conditioned by transmitters **1154***a* through **1154***r*, and transmitted back to base station **1110**.

[0105] At base station **1110**, the modulated signals from UE **1150** are received by antennas **1124**, conditioned by receivers **1122**, demodulated by a demodulator **1140**, and processed by a RX data processor **1142** to extract the reverse link message transmitted by UE **1150**. Further, processor **1130** can process the extracted message to determine which precoding matrix to use for determining the beamforming weights.

[0106] Processors **1130** and **1170** can direct (e.g., control, coordinate, manage, etc.) operation at base station **1110** and UE **1150**, respectively. Respective processors **1130** and **1170** can be associated with memory **1132** and **1172** that store program codes and data. Processors **1130** and **1170** can also

perform computations to derive frequency and impulse response estimates for the uplink and downlink, respectively.

[0107] It is to be understood that the aspects described herein can be implemented in hardware, software, firmware, middleware, microcode, or any combination thereof. For a hardware implementation, the processing units can be implemented within one or more application specific integrated circuits (ASICs), digital signal processors (DSPs), digital signal processing devices (DSPDs), programmable logic devices (PLDs), field programmable gate arrays (FPGAs), processors, controllers, micro-controllers, microprocessors, other electronic units designed to perform the functions described herein, or a combination thereof.

[0108] When the embodiments are implemented in software, firmware, middleware or microcode, program code or code segments, they can be stored in a machine-readable medium, such as a storage component. A code segment can represent a procedure, a function, a subprogram, a program, a routine, a subroutine, a module, a software package, a class, or any combination of instructions, data structures, or program statements. A code segment can be coupled to another code segment or a hardware circuit by passing and/or receiving information, data, arguments, parameters, or memory contents. Information, arguments, parameters, data, etc., can be passed, forwarded, or transmitted using any suitable means including memory sharing, message passing, token passing, network transmission, etc.

[0109] For a software implementation, the techniques described herein can be implemented with modules (e.g., procedures, functions, and so on) that perform the functions described herein. The software codes can be stored in memory units and executed by processors. The memory unit can be implemented within the processor or external to the processor, in which case it can be communicatively coupled to the processor via various means as is known in the art.

[0110] What has been described above includes examples of one or more embodiments. It is, of course, not possible to describe every conceivable combination of components or methodologies for purposes of describing the aforementioned aspects, but one of ordinary skill in the art can recognize that many further combinations and permutations of various aspects are possible. Accordingly, the described aspects are intended to embrace all such alterations, modifications and variations that fall within the spirit and scope of the appended claims. Furthermore, to the extent that the term "includes" is used in either the detailed description or the claims, such term is intended to be inclusive in a manner similar to the term "comprising" as "comprising" is interpreted when employed as a transitional word in a claim.

What is claimed is:

1. A method that facilitates responding to overload indicators in a wireless communication environment, comprising:

receiving an over-the-air overload indicator from a non-serving base station at a user equipment (UE);

generating a report based upon the over-the-air overload indicator; and

sending the report to a serving base station from the UE.

2. The method of claim **1**, wherein the report includes information related to at least one of the over-the-air overload indicator, a transmit power spectral density (PSD) of the UE after being adjusted based upon the over-the-air overload indicator, or a power headroom of the UE.

3. The method of claim **1**, further comprising adjusting a transmit power spectral density (PSD) of the UE based upon the over-the-air overload indicator received from the non-serving base station.

4. The method of claim **3**, further comprising:

receiving a power control command from the serving base station at the UE, wherein the power control command is a function of a backhaul overload indicator received by the serving base station from the non-serving base station and the report sent by the UE; and

adjusting the transmit PSD of the UE based upon the power control command.

5. The method of claim **1**, wherein the UE is configured by the serving base station to ignore the over-the-air overload indicator sent from the non-serving base station.

6. The method of claim **5**, further comprising:

receiving a power control command from the serving base station at the UE, wherein the power control command is a function of a backhaul overload indicator received by the serving base station from the non-serving base station; and

adjusting a transmit power spectral density (PSD) of the UE based upon the power control command without alteration based upon the over-the-air overload indicator sent from the non-serving base station.

7. A wireless communications apparatus, comprising:

a memory that retains instructions related to receiving an over-the-air overload indicator from a non-serving base station at a user equipment (UE), generating a report based upon the over-the-air overload indicator, and sending the report to a serving base station from the UE; and

a processor, coupled to the memory, configured to execute the instructions retained in the memory.

8. The wireless communications apparatus of claim **7**, wherein the report includes information related to at least one of the over-the-air overload indicator, a transmit power spectral density (PSD) of the UE after being adjusted based upon the over-the-air overload indicator, or a power headroom of the UE.

9. The wireless communications apparatus of claim **7**, wherein the memory further retains instructions related to adjusting a transmit power spectral density (PSD) of the UE based upon the over-the-air overload indicator received from the non-serving base station.

10. The wireless communications apparatus of claim **9**, wherein the memory further retains instructions related to receiving a power control command from the serving base station at the UE, wherein the power control command is a function of a backhaul overload indicator received by the serving base station from the non-serving base station and the report sent by the UE, and adjusting the transmit PSD of the UE based upon the power control command.

11. The wireless communications apparatus of claim **7**, wherein the UE is configured by the serving base station to ignore the over-the-air overload indicator sent from the non-serving base station.

12. The wireless communications apparatus of claim **11**, wherein the memory further retains instructions related to receiving a power control command from the serving base station at the UE, wherein the power control command is a function of a backhaul overload indicator received by the serving base station from the non-serving base station, and adjusting a transmit power spectral density (PSD) of the UE

based upon the power control command without alteration based upon the over-the-air overload indicator sent from the non-serving base station.

13. A wireless communications apparatus that enables utilizing overload indicators in a wireless communication environment, comprising:

means for receiving an over-the-air overload indicator from a non-serving base station at a user equipment (UE);

means for generating a report based upon the over-the-air overload indicator; and

means for sending the report to a serving base station from the UE.

14. The wireless communications apparatus of claim **13**, further comprising means for adjusting a transmit power spectral density (PSD) of the UE based upon the over-the-air overload indicator received from the non-serving base station.

15. The wireless communications apparatus of claim **13**, further comprising means for adjusting a transmit power spectral density (PSD) of the UE based upon a power control command received from the serving base station, wherein the power control command is a function of the report and a backhaul overload indicator received by the serving base station from the non-serving base station.

16. The wireless communications apparatus of claim **13**, wherein the report includes information related to at least one of the over-the-air overload indicator, a transmit power spectral density (PSD) of the UE after being adjusted based upon the over-the-air overload indicator, or a power headroom of the UE.

17. The wireless communications apparatus of claim **13**, wherein the UE is configured by the serving base station to ignore the over-the-air overload indicator sent from the non-serving base station.

18. A computer program product, comprising:

a computer-readable medium comprising:

code for receiving an over-the-air overload indicator from a non-serving base station at a user equipment (UE);

code for generating a report based upon the over-the-air overload indicator; and

code for sending the report to a serving base station from the UE.

19. The computer program product of claim **18**, wherein the computer-readable medium further comprises code for adjusting a transmit power spectral density (PSD) of the UE based upon the over-the-air overload indicator received from the non-serving base station.

20. The computer program product of claim **18**, wherein the computer-readable medium further comprises code for adjusting a transmit power spectral density (PSD) of the UE based upon a power control command received from the serving base station, wherein the power control command is a function of the report and a backhaul overload indicator received by the serving base station from the non-serving base station.

21. The computer program product of claim **18**, wherein the report includes information related to at least one of the over-the-air overload indicator, a transmit power spectral density (PSD) of the UE after being adjusted based upon the over-the-air overload indicator, or a power headroom of the UE.

22. The computer program product of claim **18**, wherein the UE is configured by the serving base station to ignore the over-the-air overload indicator sent from the non-serving base station.

23. A wireless communications apparatus, comprising:

a processor configured to:

receive an over-the-air overload indicator from a non-serving base station at a user equipment (UE);

generate a report based upon the over-the-air overload indicator; and

send the report to a serving base station from the UE.

24. A method that facilitates responding to overload indicators in a wireless communication environment, comprising:

receiving a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the UE from a non-serving base station; and

generating a power control command for the UE based at least in part upon the report received from the UE.

25. The method of claim **24**, wherein the report includes information related to at least one of the over-the-air overload indicator, a transmit power spectral density (PSD) of the UE after being adjusted based upon the over-the-air overload indicator, or a power headroom of the UE.

26. The method of claim **24**, further comprising generating the power control command for the UE further based upon a backhaul overload indicator received from the non-serving base station over a backhaul.

27. The method of claim **24**, further comprising transmitting the power control command to the UE over a downlink in a Physical Downlink Control Channel (PDCCH).

28. The method of claim **24**, further comprising configuring the UE to ignore the over-the-air overload indicator received by the UE from the non-serving base station.

29. The method of claim **24**, further comprising signaling information to the non-serving base station that selectively causes the non-serving base station to one of send or inhibit sending a backhaul overload indicator over a backhaul as a function of served UE type and state.

30. The method of claim **29**, further comprising:

determining whether a serving base station serves at least one legacy UE;

signaling information to the non-serving base station that causes the non-serving base station to inhibit sending the backhaul overload indicator over the backhaul when the serving base station is recognized as not serving the at least one legacy UE;

determining respective states of the at least one legacy UE when the serving base station is recognized as serving the at least one legacy UE;

signaling information to the non-serving base station that causes the non-serving base station to inhibit sending the backhaul overload indicator over the backhaul when none of the at least one legacy UE served by the serving base station is recognized as being in an active state; and

signaling information to the non-serving base station that causes the non-serving base station to send the backhaul overload indicator over the backhaul when one or more of the at least one legacy UE served by the serving base station is recognized as being in the active state.

31. A wireless communications apparatus, comprising:

a memory that retains instructions related to receiving a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the

UE from a non-serving base station, and generating a power control command for the UE based at least in part upon the report received from the UE; and

a processor, coupled to the memory, configured to execute the instructions retained in the memory.

32. The wireless communications apparatus of claim **31**, wherein the report includes information related to at least one of the over-the-air overload indicator, a transmit power spectral density (PSD) of the UE after being adjusted based upon the over-the-air overload indicator, or a power headroom of the UE.

33. The wireless communications apparatus of claim **31**, wherein the memory further retains instructions related to generating the power control command for the UE further based upon a backhaul overload indicator received from the non-serving base station over a backhaul.

34. The wireless communications apparatus of claim **31**, wherein the memory further retains instructions related to transmitting the power control command to the UE over a downlink in a Physical Downlink Control Channel (PDCCH).

35. The wireless communications apparatus of claim **31**, wherein the memory further retains instructions related to configuring the UE to ignore the over-the-air overload indicator received by the UE from the non-serving base station.

36. The wireless communications apparatus of claim **31**, wherein the memory further retains instructions related to signaling information to the non-serving base station that selectively causes the non-serving base station to one of send or inhibit sending a backhaul overload indicator over a backhaul as a function of served UE type and state.

37. The wireless communications apparatus of claim **36**, wherein the memory further retains instructions related to determining whether a serving base station serves at least one legacy UE, signaling information to the non-serving base station that causes the non-serving base station to inhibit sending the backhaul overload indicator over the backhaul when the serving base station is recognized as not serving the at least one legacy UE, determining respective states of the at least one legacy UE when the serving base station is recognized as serving the at least one legacy UE, signaling information to the non-serving base station that causes the non-serving base station to inhibit sending the backhaul overload indicator over the backhaul when none of the at least one legacy UE served by the serving base station is recognized as being in an active state, and signaling information to the non-serving base station that causes the non-serving base station to send the backhaul overload indicator over the backhaul when one or more of the at least one legacy UE served by the serving base station is recognized as being in the active state.

38. A wireless communications apparatus that enables employing overload indicators in a wireless communication environment, comprising:

means for receiving a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the UE from a non-serving base station; and

means for generating a power control command for the UE based at least in part upon the report received from the UE.

39. The wireless communications apparatus of claim **38**, further comprising means for generating the power control command for the UE further based upon a backhaul overload indicator received from the non-serving base station over a backhaul.

40. The wireless communications apparatus of claim **38**, further comprising means for configuring the UE to ignore the over-the-air overload indicator received by the UE from the non-serving base station.

41. The wireless communications apparatus of claim **38**, further comprising means for signaling information to the non-serving base station that selectively causes the non-serving base station to one of send or inhibit sending a backhaul overload indicator over a backhaul as a function of served UE type and state.

42. The wireless communications apparatus of claim **38**, wherein the report includes information related to at least one of the over-the-air overload indicator, a transmit power spectral density (PSD) of the UE after being adjusted based upon the over-the-air overload indicator, or a power headroom of the UE.

43. A computer program product, comprising:

a computer-readable medium comprising:

code for receiving a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the UE from a non-serving base station; and

code for generating a power control command for the UE based at least in part upon the report received from the UE.

44. The computer program product of claim **43**, wherein the computer-readable medium further comprises code for generating the power control command for the UE further based upon a backhaul overload indicator received from the non-serving base station over a backhaul.

45. The computer program product of claim **43**, wherein the computer-readable medium further comprises code for configuring the UE to ignore the over-the-air overload indicator received by the UE from the non-serving base station.

46. The computer program product of claim **43**, wherein the computer-readable medium further comprises code for signaling information to the non-serving base station that selectively causes the non-serving base station to one of send or inhibit sending a backhaul overload indicator over a backhaul as a function of served UE type and state.

47. The computer program product of claim **43**, wherein the report includes information related to at least one of the over-the-air overload indicator, a transmit power spectral density (PSD) of the UE after being adjusted based upon the over-the-air overload indicator, or a power headroom of the UE.

48. A wireless communications apparatus, comprising:

a processor configured to:

receive a report from a user equipment (UE) generated based upon an over-the-air overload indicator received by the UE from a non-serving base station;

generate a power control command for the UE based at least in part upon the report received from the UE; and

transmit the power control command to the UE over a downlink.

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